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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Oct. 6, 1981 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	4,772 through 4,774
Utility Patents	4,292,687 through 4,293,956

Reissue Patents based on the above identified patents. No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(g) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,107,674, Re. S.N. 620,798, Filed June 14, 1984, Cl. 343/65R, COLLISION AVOIDANCE SYSTEM FOR AIRCRAFTS, Chuhei Funatsu, et al., Owner of Record: *Toyo Tsushinki Kabusiki Jaka Toyo Communication Equipment Co., Ltd., Kawasaki, Japan,* Attorney or Agent: V. M. Creedon, et al., Ex. Gp.: 222

4,335,266, Re. S.N. 620,637, Filed June 14, 1984, Cl. 136/260, METHODS FOR FORMING THIN-FILM HETEROJUNCTION SOLAR CELLS FROM I-III-VI2 CHALCOPYRITE COMPOUNDS, AND SOLAR CELLS PRODUCED THEREBY, Reid A. Michelsen, et al., Owner of Record: *Boeing Co., Seattle, Wash.,* Attorney or Agent: Robert B. Hughes, et al., Ex. Gp.: 114

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Subscription Pricing Information

The subscription prices on the following publications have been changed as indicated below:

Title: Official Gazette, Patent Section

First-class domestic mailing	$375.00
Fourth-class domestic mailing	270.00
Fourth-class foreign mailing	337.50
Single copies each, domestic	13.00
Single copies each, foreign	16.25

Back copies will not be furnished.

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer, 1984.

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
Sept. 11, 1984. *Assistant Commissioner for Administration.*

Department of the Treasury
United States Customs Service
(T.D. 84–179)

Recordation of Trade Name: "ZIMMER, INC."

Agency: U.S. Customs Service, Department of the Treasury

Action: Notice of Recordation

Summary: On Mar. 27, 1984, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "ZIMMER, INC." was published in the Federal Register (49 FR 11743 - 11744). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views, or arguments submitted in opposition to the recordation and received not later than May 29, 1984. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "ZIMMER, INC." is recorded as the trade name used by Zimmer, Inc., a corporation organized under the laws of the State of Delaware, located in Warsaw, Ind. 46580. The trade name is used in connection with the marketing of orthopedic, surgical, patient-care and hospital products manufactured in the United States.

Date: Aug. 22, 1984.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Aug. 16, 1984. *Director, Entry Procedures and Penalties Division.*

Department of the Treasury
U.S. Customs Service
(T.D. 84–177)

Recordation of Trade Name: "THE DRACKETT COMPANY"

Agency: U.S. Customs Service, Department of the Treasury

Action: Notice of Recordation

Summary: On Mar. 27, 1984, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "THE DRACKETT COMPANY" was published in the Federal Register (49 FR 11743). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views, or arguments submitted in opposition to the recordation and received not later than May 29, 1984. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "THE DRACKETT COMPANY" is recorded as the trade name used by The Drackett Co., a corporation organized under the laws of the State of Delaware, located at 5020 Spring Ave., Cincinnati, Ohio 45232. The trade name is used in connection with the following merchandise manufactured in the United States: household care products, including preparations for windows, floors, tile, etc.; furniture and silver polishes; drain cleaners; air deodorants and disinfectants, etc.; mops and brooms.

Date: Aug. 22, 1984.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Aug. 16, 1984. *Director, Entry Procedures and Penalties Division.*

Department of the Treasury
U.S. Customs Service
(T.D. 84–178)

Recordation of Trade Name: "WESTWOOD PHARMACEUTICALS, INC."

Agency: U.S. Customs Service, Department of the Treasury

Action: Notice of Recordation

Summary: On Mar. 27, 1984, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "WESTWOOD PHARMACEUTICALS, INC." was published in the Federal Register (49 FR 11743). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views, or arguments submitted in opposition to the recordation and received not later than May 29, 1984. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "WESTWOOD PHARMACEUTICALS, INC." is recorded as the trade name used by Westwood Pharmaceuticals, Inc., a corporation organized under the laws of the State of Delaware, located at 468 Dewitt St., Buffalo, N.Y. 14213. The trade name is used in connection with a wide range of dermatological products manufactured in the United States.

Date: Aug. 22, 1984.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Aug. 16, 1984. *Director, Entry Procedures and Penalties Division.*

Erratum

The registrant in the following registration, listed in the "Index of Registrants" section of the Trademark Official Gazette of June 26, 1984, for Registration No. 1,083,898, was incorrectly identified as AMP Inc.

The registrant's name as corrected is AMF Inc.

MARK M. NEWMAN,
July 18, 1984. *Director, Trademark Examining Operation.*

Errata

The following registration numbers were inadvertently listed as canceled in the "Trademark Registrations Canceled, Section 8" section of the Trademark Official Gazettes listed below:

998,467	TM 590	Apr. 28, 1981
998,650	TM 591	Apr. 28, 1981
998,651	TM 591	Apr. 28, 1981
1,002,363	TM 449	June 16, 1981
1,037,250	TM 751	Aug. 31, 1982
1,042,679	TM 756	Nov. 30, 1982
1,077,727	TM 474	Apr. 17, 1984

Consequently, the above-identified registrations are still active.

MARK M. NEWMAN,
Sept. 6, 1984. *Director, Trademark Examining Operation.*

Patents Available for License or Sale

Des. 273,756. PATTERNED LAWN TRIM STRIP FASTENING DEVICE. *Thomas A. Rexroth,* 522 Melville, West Burlington, Iowa 52655.

3,209,118. RESISTANCE PIPE WELDER. *Ray G. Lee,* P.O. Box 10415, Kansas City, Mo. 64111.

4,418,854. BACKPACK SHELTER APPARATUS. *Joseph Genovese.* Correspondence to: Charles P. Padgett, Jr., Esq., 1777 West Camelback Rd., Phoenix. Ariz. 85015.

4,427,007. UNIVERSAL POWER COMPRESS. *Thomas A. Rexroth,* 522 Melville, West Burlington, Iowa 52655.

4,450,849. DENTAL PHYSIO-TAPE (DENTAL FLOSS). *Chris A. Cerceo; Jeanie F. Kaufman; Martin H. Kaufman.* Box 243, Ridgecrest, Calif. 93555.

4,452,007. HORIZONTAL AXIS ROTATORY FRUSTUM FLYING TOY. *Lynn W. Martin,* 2314 Hiram, Wichita, Kans. 67212.

4,463,531. PROCESS FOR MANUFACTURING A FRAME SUITABLE FOR ENCASING A PORTION OF AN EXTERNAL WALL AND FRAMES OBTAINED THEREOF. *Sergio Iorio Peretto,* Aresod/Sarre (Aosta), Italy (11010).

3,624,918. CLOTHES DRYERS. *M. B. Heftler.* Correspondence to: Richard V. Balgenorth, Trust Investment Department, National Bank of Detroit, P.O. Box 222A, Detroit, Mich. 48232.

The following patents are offered by: Charles H. Abrams, P.O. Box 493, Westminister, Colo. 80030.

4,126,324. UTILITY TRAILER.

1,116,353. PORT-A-TRAILER.

The following five patents are offered by Dr. William N. Lawless, Ceramphysiscs, Inc., P.O. Box 346, Westerville, Ohio 43081.

4,296,147. THALLOUS HALIDE MATERIALS FOR USE IN CRYOGENIC APPLICATIONS.

4,354,355. THALLOUS HALIDE MATERIALS FOR USE IN CRYOGENIC APPLICATIONS (DIVISION OF '147).

4,356,235. THALLOUS & CESIUM HALIDE MATERIALS FOR USE IN CRYOGENIC APPLICATIONS.

4,396,721. GLASS CERAMIC MATERIALS HAVING CONTROLLABLE TEMPERATURE COEFFICIENTS OF DIELECTRIC.

4,462,891. OXYGEN SENSOR & HIGH TEMPERATURE FUEL CELLS.

General Electric Co. is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Division Patent Counsel, Mobile Communications Business Division, General Electric Co., Mountain View Rd., Lynchburg, Va. 24502.

4,450,590. DISCRIMINATOR CIRCUIT FOR FREQUENCY MODULATION RECEIVERS.

4.449,248. BATTERY SAVING RADIO CIRCUIT AND SYSTEM.

Applications for license may be addressed to: Patent Counsel, Aerospace Control Systems Dept., General Electric Co., P.O. Box 5000, Binghamton, N.Y. 13902.

4,445,375. TUNED CORIOLIS ANGULAR RATE MEASURING DEVICE.

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: General Electric Co., Component Products Group, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801-2204, Attention: Patent Counsel.

3,514,836. APPARATUS FOR PRODUCING INSULATION IN THE SLOTS OF MAGNETIC CORES.

3,634,932. METHOD FOR PRODUCING INSULATION IN THE SLOTS OF MAGNETIC CORES.

3,702,498. APPARATUS AND METHOD FOR PROVIDING INSULATION IN THE SLOTS OF MAGNETIC CORES.

3,703,854. METHOD FOR PRECISELY FORMING AND PLACING INSULATION IN THE SLOTS OF MAGNETIC CORES.

3,745,394. ELECTRICAL INSULATORS FOR SLOTTED MAGNETIC CORES.

3,778,889. APPARATUS AND METHOD FOR PERFORMING MANUFACTURING OPERATIONS ON AN ARTICLE OF MANUFACTURE.

3,778,890. APPARATUS AND METHOD FOR PRECISELY FORMING AND PLACING INSULATION IN THE SLOTS OF MAGNETIC CORES.

4,441,545. AIR CONDITIONING THERMOSTATIC CONTROL SYSTEM HAVING MODULAR INCLUSION OF REMOTE TEMPERATURE SET-BACK CAPABILITY.

4,441,770. APPLIANCE ANTI-TIP DEVICE.

4,443,690. POWER CONTROL FOR COOKING APPLIANCE WITH TRANSIENT OPERATING MODES.

4,446,349. MICROWAVE PHASE SHIFTING DEVICE.

4,447,799. HIGH TEMPERATURE THERMISTOR AND METHOD OF ASSEMBLING THE SAME.

4,451,224. MOLD DEVICE FOR MAKING PLASTIC ARTICLES FROM RESIN.

4,453,065. MICROWAVE OVEN DOOR ALIGNING ASSEMBLY.

4,455,467. METAL RACK FOR MICROWAVE OVEN.

4,286,391. CONTROL SYSTEM FOR AN AUTOMATIC CLOTHES DRYER.

4,288,995. HOUSEHOLD REFRIGERATOR MOVABLE STORAGE ASSEMBLY.

4,298,110. TWO-SPEED CLUTCH WITH NEUTRAL.

4,301,666. LUBRICATION SYSTEM FOR TRANSMISSION OF AUTOMATIC CLOTHES WASHING MACHINE.

4,303,818. MICROWAVE OVEN HUMIDITY SENSING ARRANGEMENT.

4,317,343. DRIVE ARRANGEMENT WITH A WASHING MACHINE.

4,320,614. PANEL ASSEMBLY FOR SHEET METAL PANELS HAVING DOUBLE WALL CONSTRUCTION CORNERS.

4,323,342. BURNER IGNITION AND CONTROL SYSTEM.

4,325,234. ADJUSTABLE STROKE AGITATION SYSTEM.

4,330,081. WATER TEMPERATURE CONTROL SYSTEM FOR A CLOTHES WASHING MACHINE.

4,385,082. PREPARATION OF SHIELDED PLASTIC MICROWAVE OVENS.

4,386,347. METHOD OF, AND APPARATUS FOR, INCREASED RESOLUTION SLEWING OF A BAR-GRAPH-DISPLAY DATA INPUT/OUTPUT SYSTEM.

4,390,769. INDUCTION HEATING APPARATUS PROVIDING SMOOTH POWER CONTROL.

4,392,766. AUTOMATIC FEEDING APPARATUS.

4,394,564. SOLID PLATE HEATING UNIT.

4,394,565. POWER DISCONNECT ASSEMBLY FOR ELECTRIC HEATING ELEMENTS.

4,413,672. CENTRAL DESK AIR CONDITIONING CONTROL SYSTEM.

4,418,744. AIR CONDITIONING CONTROL SYSTEM WITH USER POWER UP.

4,424,439. PROTECTIVE METHOD AND CIRCUIT ARRANGEMENT FOR APPLIANCE INCORPORATING SHEATHED HEATING ELEMENT.

4,426,564. PARALLEL RESONANT INDUCTION COOKING SURFACE UNIT.

4,434,344. SELF-STORING MEAL RACK FOR A MICROWAVE OVEN.

4,435,993. CONTROL KNOB TO SHAFT ASSEMBLY.

4,437,715. RACK-SUPPORTING CHANNEL AND STOP.

4,440,004. WOBBLE WASHER.

4,441,015. COOKING APPARATUS EMPLOYING A ROTISSERIE MODE WITH STATIONARY FOOD.

Applications for license may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Co., Appliance Park, AP1-230, Louisville, Ky. 40225.

3,522,906. CARTON FLAP SUPPORT.

3,727,421. ROOM AIR-CONDITIONER ONE-PIECE CHASSIS.

3,861,283. ROOM AIR-CONDITIONER MOUNTING ARRANGEMENT.

3,864,844. SOLID STATE DRYER CONTROL.

3,871,800. HERMETICALLY SEALED COMPRESSOR SUCTION TUBE ASSEMBLY.

4,006,339. MICROWAVE HEATING APPARATUS WITH MULTIPLE COUPLING ELEMENTS AND MICROWAVE POWER SOURCES.

4,006,338. MICROWAVE HEATING APPARATUS WITH IMPROVED MULTIPLE COUPLERS AND SOLID STATE POWER SOURCE.

4,031,745. METHOD OF FORMING CONSTRICTION IN TUBING.

4,059,970. AUTOMATIC ICEMAKER INCLUDING MEANS FOR MINIMIZING THE SUPERCOOLING EFFECT.

4,062,201. AUTOMATIC ICEMAKER INCLUDING MEANS FOR MINIMIZING THE SUPERCOOLING EFFECT.

4,150,679. DISHWASHER WITH IMPROVED BY-PASS FILTER ARRANGEMENT.

4,158,950. HEAT PUMP DEFROST SYSTEM.

4,196,462. PROTECTIVE CONTROL CIRCUIT FOR INDUCTION MOTORS.

4,263,962. HEAT PUMP CONTROL SYSTEM.

4,283,928. TRANSMISSION FOR WASHING MACHINE.

4,285,212. ICE DISPENSER STORAGE ASSEMBLY.

4,285,214. FLEXIBLE COUPLING.

Applications for license may be addressed to: Patent Counsel W-409, Medical Systems Group, General Electric Co., P.O. Box 414, Milwaukee, Wis. 53201.

3,225,240. IMAGE TUBE HAVING EXTERNAL SEMICONDUCTIVE LAYER ON TARGET OF WIRES IN GLASS MATRIX.

3,331,979. X-RADIATION-TO-ELECTRICAL SIGNAL TRANSDUCER.

3,778,659. INVERTED IMAGE MULTIBEAM CATHODE RAY TUBE.

3,783,297. X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN AND METHOD OF MANUFACTURE THEREOF.

3,783,298. X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN AND METHOD OF MANUFACTURE THEREOF.

3,783,299. X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN AND METHOD OF MANUFACTURE THEREOF.

3,809,889. IMAGE INTENSIFIER COMPENSATED FOR EARTH'S MAGNETIC FIELD.

3,838,273. X-RAY IMAGE INTENSIFIER INPUT.

3,852,131. METHOD OF MANUFACTURING X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN.

3,852,132. METHOD OF MANUFACTURING X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN.

3,852,133. METHOD OF MANUFACTURING X-RAY IMAGE INTENSIFIER INPUT PHOSPHOR SCREEN.

3,868,512. COMPOSITE INPUT SCREEN FOR X-RAY IMAGING DEVICES.

3,890,506. FAST RESPONSE TIME IMAGE TUBE CAMERA.

3,944,835. HIGH ENERGY RADIATION DETECTOR HAVING IMPROVED REFLECTIVE BACKING FOR PHOSPHOR LAYER.

4,011,454. STRUCTURED X-RAY PHOSPHOR SCREEN.

4,012,637. RADIOGRAPHIC SCREEN WITH IMPROVED RESOLUTION.

4,069,438. PHOTOEMISSIVE CATHODE AND METHOD OF USING COMPRISING EITHER CADMIUMTELLURIDE OR CESIUM IODIDE.

4,289,799. METHOD FOR MAKING HIGH RES-

OLUTION PHOSPHORESCENT OUTPUT SCREENS.

3,244,174. BODY IMPLANTABLE CONDUCTOR.

3,311,111. CONTROLLABLE ELECTRIC BODY TISSUE STIMULATORS.

3,333,045. BODY IMPLANTABLE ELECTRICAL CONDUCTOR.

3,340,493. BODY IMPLANTABLE ELECTRICAL CONNECTOR.

3,345,989. IMPLANTABLE POWER SOURCE EMPLOYING A BODY FLUID AS AN ELECTROLYTE.

3,416,533. CONDUCTIVE CATHETER.

3,426,748. STIMULATOR ANALYZER AND LOCATOR.

3,517,663. THRESHOLD ANALYZER FOR AN IMPLANTED HEART STIMULATOR.

3,563,247. BIDIRECTIONAL HEART STIMULATOR.

3,677,251. BODY ORGAN STIMULATOR WITH INTERFERENCE REJECTOR.

3,717,153. STANDBY EXTERNAL RATE CONTROL AND IMPLANTED STANDBY HEART PACER.

3,726,285. BODY ORGAN STIMULUS PULSE GENERATOR WITH DECOUPLED TIMING CIRCUIT AND VOLTAGE MULTIPLIER.

3,735,766. OPTIONAL UNIPOLAR-BIPOLAR BODY ORGAN STIMULATOR.

3,738,369. BODY ORGAN STIMULATOR FUNCTION CONTROL SWITCH.

3,768,014. CARDIAC PACEMAKER RATE/INTERVAL COMPUTER SYSTEM.

3,783,877. BODY IMPLANTABLE STIMULATOR BATTERY UTILIZATION CIRCUIT.

3,835,865. BODY ORGAN STIMULATOR.

3,854,999. MERCURIC OXIDE ELECTRODE AND METHOD OF FORMING.

3,945,387. IMPLANTABLE CARDIAC PACER WITH CHARACTERISTIC CONTROLLABLE CIRCUIT AND CONTROL DEVICE THEREFOR.

4,030,510. STANDBY HEART PACER.

4,201,430. ROTARY FEED FOR TOMOGRAPHIC SCANNING APPARATUS.

4,236,079. TOMOGRAPHIC SCANNING APPARATUS.

4,217,498. TOMOGRAPHIC SCANNING APPARATUS WITH IONIZATION DETECTOR MEANS.

4,275,305. TOMOGRAPHIC SCANNING APPARATUS WITH IONIZATION DETECTOR MEANS.

4,365,339. TOMOGRAPHIC APPARATUS AND METHOD FOR RECONSTRUCTING PLANAR SLICES FROM NON-ABSORBED AND NON-SCATTERED RADIATION.

4,217,499. TOMOGRAPHIC SCANNING APPARATUS WITH IONIZATION DETECTOR MEANS.

4,338,521. MODULAR RADIATION DETECTOR ARRAY AND MODULE.

4,284,896. COMPUTERIZED TOMOGRAPHIC RECONSTRUCTION METHOD AND SYSTEM UTILIZING REFLECTION.

4,280,178. COMPUTERIZED TOMOGRAPHIC RECONSTRUCTION METHOD UTILIZING REFLECTION.

4,361,902. EXPANDABLE COLLIMATOR.

4,352,530. ROTARY FEED FOR TOMOGRAPHIC SCANNING APPARATUS.

4,392,096. SECTIONAL X-RAY TABLE HAVING DUAL SERVO DRIVES.

4,353,518. UNIVERSAL CABLE TRANSPORT MECHANISM.

4,366,577. COMPUTED TOMOGRAPHY SYSTEM CABLE RETRACTOR.

4,303,863. TOMOGRAPHIC SCANNING APPARATUS WITH IONIZATION DETECTOR MEANS.

4,385,397. PARALLAX CORRECTED EXTERNAL ALIGNMENT LIGHTS.

4,405,863. DETECTOR ARRAY RETAINING AND POSITIONING SYSTEM.

4,400,820. AXIAL TOMOGRAPHY HEAD HOLDER.

4,107,531. ENCODER CLOCK MECHANISM FOR CONTROLLING THE X-RAY PULSES OF A CT SYSTEM.

4,157,472. X-RAY BODY SCANNER FOR COMPUTERIZED TOMOGRAPHY.

4,096,530. METHOD AND APPARATUS FOR OBSCURING THE RASTER LINES IN A PHOTOGRAPH OF A VIDEO MONITOR SCREEN.

4,063,097. X-RAY BODY SCANNER.

4,075,527. X-RAY DETECTOR.

4,158,776. PATIENT SENSING AND INDICATING ARRANGEMENT FOR A COMPUTED TOMOGRAPHY SYSTEM.

4,115,695. GANTRY FOR COMPUTED TOMOGRAPHY.

4,105,922. CT NUMBER IDENTIFIER IN A COMPUTED TOMOGRAPHY SYSTEM.

4,117,337. PATIENT POSITIONING INDICATION ARRANGEMENT FOR A COMPUTED TOMOGRAPHY SYSTEM.

4,115,696. IMPROVED COMPUTED TOMOGRAPHY SCANNER.

4,093,860. GANTRY FOR COMPUTED TOMOGRAPHY.

4,093,861. GANTRY FOR COMPUTED TOMOGRAPHY V GROOVE BEARING AND CURVED TRACKS.

4,088,888. GANTRY FOR COMPUTED TOMOGRAPHY HOIST.

4,093,862. GANTRY FOR COMPUTED TOMOGRAPHY TRACK AND ROLLER LIFT.

4,112,303. GANTRY FOR COMPUTED TOMOGRAPHY BRAKE.

4,119,853. MULTI-CELL X-RAY DETECTOR.

4,161,655. PRINTED CIRCUIT FOR HIGH RESOLUTION DETECTOR.

4,228,465. ANALOG VIDEO CONVOLVER FOR REAL-TIME TWO-DIMENSIONAL IMAGE PROCESSING.

4,306,155. GAS-FILLED X-RAY DETECTOR WITH IMPROVED WINDOW.

4,276,476. RADIATION DETECTOR HAVING A UNITARY FREE-FLOATING ELECTRODE ASSEMBLY.

4,296,329. ALIGNMENT DEVICE AND METHOD FOR COMPUTERIZED TOMOGRAPHY PHANTOMS.

4,272,680. MODULAR ARRAY RADIATION DETECTOR AND METHOD.

3,919,557. IMPROVED WHOLE-BODY LINE SCANNER.

3,973,126. MAMMOGRAPHY.

3,963,933. MAMMOGRAPHY FIXTURE.
4,047,040. GRIDDED IONIZATION CHAMBER.
4,047,039. TWO-DIMENSIONAL X-RAY DETECTOR ARRAY.
4,047,041. X-RAY DETECTOR ARRAY.
3,991,312. IONIZATION CHAMBER.
4,045,675. SOLID-STATE RADIATION DETECTOR SYSTEM.
4,030,119. VIDEO WINDOW CONTROL.
4,069,438. PHOTOEMISSIVE CATHODE AND METHOD OF USING COMPRISING EITHER CADMIUM TELLURIDE OR CESIUM IODIDE.
4,031,396. X-RAY DETECTOR.
4,015,836. MAMMOGRAPHY TABLE.
4,068,306. X-RAY DATA ACQUISITION SYSTEM AND METHOD FOR CALIBRATION.
4,070,707. REDUCTION OF OFFSETS IN DATA ACQUISITION SYSTEMS.
4,167,753. PEAK DETECTING DIGITAL SCAN CONVERTER.
4,230,510. DISTRIBUTED PHOSPHOR SCINTILLATOR STRUCTURES.
4,101,924. SEMICONDUCTOR RADIATION DETECTOR.
4,180,737. SOLID-STATE X-RAY DETECTOR.
4,159,424. TRAPEZOIDAL SCINTILLATOR FOR RADIATION DETECTORS.
4,242,221. CERAMIC-LIKE SCINTILLATORS.
4,196,352. MULTIPLE-PURPOSE HIGH-SPEED TOMOGRAPHIC X-RAY SCANNER.
4,129,783. HIGH-SPEED COMPUTERIZED TOMOGRAPHY IMAGING SYSTEM.
4,146,907. RADIATION DETECTOR.
4,140,909. RADIATION DETECTOR.
4,187,427. STRUCTURE FOR COLLIMATED SCINTILLATION DETECTORS USEFUL IN TOMOGRAPHY.
4,237,559. BONE IMPLANT EMBODYING A COMPOSITE HIGH AND LOW DENSITY-FIRED CERAMIC CONSTRUCTION.
4,262,202. SCINTILLATOR DETECTOR ARRAY.
4,376,893. ION CHAMBER ARRAY WITH REDUCED DEAD SPACE.
4,233,514. SOLID-STATE RADIATION DETECTOR AND ARRAYS THEROF.
4,311,922. VARIABLE EXCITATION CIRCUIT.
4,313,257. ANNEALING METHODS FOR IMPROVING PERFORMANCE OF A RADIATION SENSOR.
4,316,817. INDEX-MATCHED PHOSPHOR SCINTILLATOR STRUCTURES.
4,392,235. ELECTRONICALLY SCANNED X-RAY TOMOGRAPHY SYSTEM.
4,362,946. DISTRIBUTED PHOSPHOR SCINTILLATOR STRUCTURES.
4,374,749. INDEX-MATCHED PHOSPHOR SCINTILLATOR STRUCTURES.
4,375,423. INDEX-MATCHED PHOSPHOR SCINTILLATOR STRUCTURES.
3,848,130. SELECTIVE MATERIAL X-RAY IMAGING SYSTEM.
4,355,331. X-RAY IMAGE SUBTRACTING SYSTEM.
4,361,901. MULTIPLE VOLTAGE X-RAY SWITCHING SYSTEM.
4,367,490. NOISE REDUCTION IN DIGITAL FLUOROSCOPY SYSTEMS.
4,393,402. SUBTRACTION FLUOROSCOPY METHOD AND APPARATUS.
4,399,457. X-RAY IMAGE DIGITAL SUBTRACTION SYSTEM.
4,399,550. SPINNING FILTER FOR X-RAY APPARATUS.

American Hospital Supply Corp. is prepared to grant non-exclusive licenses under the following patents to parties newly entering into the manufacture and/or assembly and sale of disposable blood pressure monitoring equipment.

Applications for licenses and license terms should be addressed to: Lyman E. Lance, President, American Pharmaseal Medical/Surgical Division, American Hospital Supply Corp., 1015 Grandview Ave., Glendale, Calif. 91209.

The patents are:

U.S. 4,267,833, METHOD OF FLUSHING A MEDICAL FLUID,

U.S. 4,267,834, SYSTEM FOR FLUSHING A MEDICAL FLUID,

U.S. 4,267,835, MEDICAL FLUSHING VALVE.

U.S. Department of Commerce
Patent and Trademark Office
Public Advisory Committee for Trademark Affairs
Notice of Open Meeting

In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92-463), announcement is made of the following Committee meeting:

The Public Advisory Committee for Trademark Affairs will meet from 9:30 a.m. until 5:00 p.m. on Oct. 24, 1984, at the U.S. Patent and Trademark Office in Rm. 11C24 of Bldg. 3, Crystal Plz., located at 2021 Jefferson Davis Hwy., Arlington, Va.

The agenda for the meeting is as follows:

(1) Finances of the Trademark Operation
(2) Trademark Automation Developments
(3) Activities of the Trademark Examining Operation
(4) Trademark Trial and Appeal Board Operations
(5) Customer Services

and any other Patent and Trademark Office activities, including legislation and international conventions, affecting trademarks.

The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come first-served basis. If time permits, oral comments by the public of three (3) minutes on each topic within the above agenda will be allowed. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed.

Copies of the minutes will be available upon request.

For further information, contact Ellen J. Seeherman, Office of the Assistant Commissioner for Trademarks, Rm. CP-11C17, Patent and Trademark Office, Washington, D.C., 20231. Telephone: 703-557-7464.

GERALD J. MOSSINGHOFF,
Sept. 18, 1984. *Assistant Secretary and Commissioner of Patents and Trademarks.*

(Official Gazette Notice)

GUIDELINES FOR EXTENSION OF PATENT TERM UNDER 35 U.S.C. 156

This notice is intended to establish initial guidelines for patent owners who are seeking extensions of patent terms pursuant to newly enacted 35 U.S.C. 156. These guidelines will be effective until further notice. Section 156 of Title 35, United States Code, provides that a patent owner seeking an extension of the term of a patent pursuant to its provisions must submit an application to the Commissioner of Patents and Trademarks (hereinafter Commissioner) within a certain defined period of time. Section 156 specifies certain components the application is to contain, including "such patent or other information as the Commissioner may require." See 35 U.S.C. 156(d)(1)(E). Section 156(d)(4) also provides that "[a]n application for the extension of the term of a patent is subject to the disclosure requirements prescribed by the Commissioner." Section 156(h) provides that the "Commissioner may establish such fees as the Commissioner determines appropriate to cover the costs to the Office of receiving and acting upon applications under this section." The purpose of this notice is to provide the guidelines which a patent owner or its agent should use in deciding whether to submit an application for the extension of the term of a patent to the Patent and Trademark Office and in actually making the submission of such an application. This notice is divided into a number of sections set forth below which treat various determinations which have to be made by a patent owner or its agent prior to submission of an application and further includes guidelines as to the actual content of an application for extension of the term of a patent.

A patent owner or its agent should use the guidelines in the various sections set forth below in determining whether a patent is subject to, and meets the conditions for, extension of its term. If so, the patent owner or its agent should also use the guidelines set forth below in preparing and filing an application for extension of the patent term. If any application for extension of the term of a patent is filed in accordance with 35 U.S.C. 156 before the date on which this notice is published in the Official Gazette and is not in compliance with the requirements of this notice, applicant will be notified of the deficiencies in the application and will be given a period of time within which to correct the deficiencies.

Guidelines

§A. Patents subject to extension of the patent term.

(a) Any patent which claims a product as defined in paragraph (b) of this section, or a method of using such a product, or a method of manufacturing such a product, is subject to being extended in accordance with 35 U.S.C. 156.

(b) The term "product" referred to in paragraph (a) of this section means (1) a human drug product or (2) any medical device, food additive, or color additive subject to regulation under the Federal Food, Drug, and Cosmetic Act. The term "human drug

product" means the active ingredient of a new drug, antibiotic drug, or human biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient.

§B. Conditions for extension of term of a patent.

The term of a patent may be extended if:

(a) the patent claims a product or a method of using or manufacturing a product as defined in §A of this notice;

(b) the term of the patent has never been previously extended except for any interim extension issued pursuant to 35 U.S.C. 156(e)(2);

(c) an application for extension is submitted pursuant to §D of this notice;

(d) the product has been subject to a regulatory review period as defined in 35 U.S.C. 156(g) and by the Secretary of Health and Human Services before its commercial marketing or use;

(e) the product has received permission for commercial marketing or use and (i) the application is submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred, or (ii) in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the application for extension is submitted within the sixty day period beginning on the date of the first permitted commercial marketing or use of a product manufactured under the process claimed in the patent;

(f) the term of the patent has not expired before the submission of an application pursuant to §D of this notice; and

(g) no other patent has been extended for the same regulatory review period for the product.

§C. Applicant for extension of patent term.

Any application for extension of a patent term must be submitted by the owner of record of the patent or its agent and must comply with the requirements of §D of this notice.

§D. Application for extension of the term of a patent.

(a) An application for extension of the term of a patent must be made in writing to the Commissioner of Patents and Trademarks. The filing date of an application for extension of the term of a patent is the date on which the complete application for extension and a duplicate of the papers thereof, certified as such, are received in the Patent and

Trademark Office or filed pursuant to the provisions of 37 CFR 1.10. The provisions of 37 CFR 1.8 should not be used to file an application for the extension of the term of a patent.

(b) A complete application for the extension of the term of a patent comprises:

(1) a complete identification of the approved product as by appropriate chemical and physical structure or characteristics;

(2) a complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;

(3) an identification of the date on which the product received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred;

(4) a statement that the application is being submitted within the sixty day period permitted for submission and an identification of the date of the last day on which the application could be submitted;

(5) a complete identification of the patent for which an extension is being sought by the name of the inventor, the patent number, and the date of issue;

(6) a copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings, in the form of a cut-up copy of the original patent with only a single column of the printed patent securely mounted or reproduced in permanent form on one side of a separate paper;

(7) a copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;

(8) a statement that the patent claims the approved product or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the approved product or a method of using or manufacturing the approved product;

(9) the relevant dates and information pursuant to 35 U.S.C. 156(g) in order to enable the Secretary of Health and Human Services to determine the applicable regulatory review period;

(10) a brief description of the activities undertaken by the applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities;

(11) a statement that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined;

(12) a statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any information which is material to any determinations to be made relative to the application for extension; and

(13) the prescribed fee for receiving and acting upon the application for extension (see §F of this notice) and an oath or declaration as set forth in paragraph (c) of this section.

(c) Any application for extension of the term of a patent submitted pursuant to paragraphs (a) and (b) of this section must include an oath or declaration signed by the owner of record of the patent or its agent which specifically identifies the application papers and the patent for which an extension is sought and avers that the person signing the oath or declaration:

(1) has reviewed and understands the contents of the application being submitted pursuant to this section;

(2) believes the patent is subject to extension pursuant to §A of this notice;

(3) believes an extension of the length claimed is fully justified under 35 U.S.C. 156; and

(4) believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in §B of this notice.

(d) If any application for extension of the term of a patent submitted pursuant to this section is held to be incomplete, applicant may seek to have that holding reviewed by filing a petition pursuant to 37 CFR 1.182 within such time as may be set, or if no time is set, within one month of the date on which the application was held incomplete.

§E. Interim extension of the term of a patent.

An applicant who has filed an application for extension pursuant to §D of this notice may request one or more interim extensions for periods of up to one year pending a final determination on the application. Any such request should be filed at least three months prior to the expiration date of the patent. The Commissioner may issue interim extensions for periods of up to one year until a final determination is made without a request by the applicant. In no event will the interim extensions granted under this section be longer than the maximum period of extension to which the applicant would be eligible.

§F. Fee for receiving and acting on an application for extension of the term of a patent.

Pursuant to 35 U.S.C. 156(h) the Commissioner has determined that a fee of $750.00 is appropriate to cover the costs to the Patent and Trademark Office of receiving and acting upon applications for extension of the term of a patent filed pursuant to 35 U.S.C. 156. The fee should accompany the application when filed. If a fee in a different amount is adopted in Title 37 of the Code of Federal Regulations, applicant will be refunded any excess or required to submit any deficiency.

§G. Address for application for extension of the term of a patent and communications relating thereto.

All applications for extension of the term of a patent and any communications relating thereto intended for the Patent and Trademark Office should be addressed to the Commissioner of Patents and Trademarks, Box Patent Ext., Washington, D.C. 20231. When appropriate, the communication should also be marked to the attention of a particular individual.

§H. For further information contact:

R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUMMARY

The initial guidelines set forth above are considered to be appropriate and authorized by 35 U.S.C. 156. They will provide appropriate guidance to patent owners and their agents pending appropriate changes which will be made in Title 37 of the Code of Federal Regulations.

9-25-84
Date

Donald J. Quigg
Acting Commissioner of Patents and Trademarks

PATENT NOTICES

Certificates of Correction for the Week of Oct. 9, 1984

Pp. 5,231	4,411,336	4,431,525	4,447,465
Re. 31,565	4,412,955	4,432,167	4,447,900
4,081,536	4,413,044	4,432,271	4,448,273
4,239,753	4,413,676	4,432,748	4,448,486
4,270,318	4,414,403	4,433,187	4,448,586
4,303,840	4,414,569	4,434,449	4,448,890
4,310,476	4,414,895	4,434,544	4,449,330
4,310,481	4,415,320	4,435,186	4,449,438
4,311,760	4,416,865	4,436,689	4,449,672
4,314,872	4,416,870	4,436,721	4,450,057
4,354,867	4,418,594	4,436,894	4,450,127
4,356,968	4,418,958	4,437,793	4,450,550
4,357,279	4,419,364	4,438,451	4,450,596
4,358,283	4,419,496	4,438,470	4,450,882
4,366,336	4,419,932	4,439,310	4,450,967
4,368,428	4,419,938	4,439,364	4,451,026
4,368,531	4,421,847	4,439,573	4,451,225
4,370,298	4,422,019	4,439,706	4,451,314
4,370,633	4,422,148	4,439,712	4,451,502
4,381,546	4,422,759	4,441,249	4,451,571
4,384,099	4,424,119	4,441,366	4,451,605
4,388,316	4,424,207	4,442,683	4,452,124
4,392,280	4,424,243	4,443,521	4,452,302
4,399,374	4,424,769	4,443,532	4,452,371
4,400,874	4,425,096	4,444,857	4,452,395
4,402,803	4,425,177	4,444,946	4,452,406
4,403,648	4,425,189	4,444,987	4,452,503
4,404,254	4,426,519	4,445,221	4,452,750
4,404,435	4,428,767	4,445,601	4,452,762
4,404,914	4,429,134	4,445,772	4,453,232
4,405,647	4,429,496	4,446,353	4,453,810
4,406,028	4,429,591	4,447,152	4,453,955
4,406,713	4,430,671	4,447,227	4,454,014
4,408,203	4,430,742	4,447,326	4,454,455
4,409,311	4,431,153	4,447,462	4,459,731

Disclaimers

4,207,747.—*Elmer J. Subera,* Cassopolis, and *Melvin W. Steelman,* Niles, Mich. AIR DEFROST SYSTEM USING SECONDARY AIR BAND COMPONENTS. Patent dated June 17, 1980. Disclaimer filed July 2, 1984, by the assignee, *Tyler Refrigeration Corp.*

The term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

4,376,957.—*Robert A. Dischert,* Burlington and *Robert E. Flory,* Princeton, N.J. TRANSMISSION SYSTEM WITH SEQUENTIAL TIME-COMPRESSED BASEBAND COLOR. Patent dated Mar. 15, 1983. Disclaimer filed Sept. 11, 1984, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,464,187.—*Eli J. Kershaw,* Richmond, Va. NESTING AIR FILTERS. Patent dated Aug. 7, 1984. Disclaimer filed Aug. 1, 1984, by the *inventor.*

The term of this patent subsequent to Dec. 13, 2000, has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 1, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-21-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	2-07-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-19-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	7-28-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	2-23-60
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	12-14-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-13-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	5-21-79
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-06-81
DESIGN, GROUP 290—K. L. CAGE, Director	2-22-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	3-12-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-02-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-12-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	11-30-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-82

Expiration of patents: The patents within the range of numbers indicated below expire during September 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,339,206 to 3,344,432, inclusive

Plant Patents ..... Numbers 2,764 to 2,769 inclusive

REEXAMINATIONS

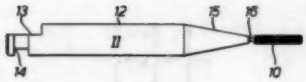
OCTOBER 9, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,189,834 (260th)
DENTAL REINFORCING PINS

Andrew J. Smith, London, England, assignor to Fairfax Dental Ltd., Dublin, Ireland

Continuation of Ser. No. 639,095, Dec. 9, 1975, abandoned.
Reexamination Request No. 90/000,478, Dec. 9, 1983.
Reexamination Certificate for Patent No. 4,189,834, issued Feb. 26, 1980, Ser. No. 804,831, Jun. 8, 1977.
Int. Cl.³ A61C *3/04*
U.S. Cl. 433—225



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

1. A dental anchoring device comprising a threaded portion for self-threading insertion in a bore formed in a tooth dentine, a connecting portion forming an integral unit with said threaded portion and having an elongated shank adapted for direct positive attachment in a powered dental hand-piece, and a weakened portion intermediate the threaded portion and one end of the connecting portion for permitting shearing and separation of the connecting portion from the threaded portion; the free end of the connecting portion having a flat portion and a part annular groove, whereby the connecting portion can be latched in a latching-type dental hand-piece to securely retain the dental anchoring device in the hand-piece witout dropping therefrom and when said threaded portion is fully inserted in a bore said weakened portion shears to separate said connecting portion from said threaded portion.

B1 4,225,580 (261st)
METHOD FOR CLEANSING FLUID DISCHARGING SKIN SURFACES, WOUNDS AND MUCOUS MEMBRANES AND MEANS FOR CARRYING OUT THE METHOD

Ulf S. E. Rothman, Bjärred, and Sten A. L. Jacobsson, Malmö, both of Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Continuation of Ser. No. 437,558, Jan. 27, 1974, abandoned.
Reexamination Request No. 90/000,113, Nov. 20, 1981.
Reexamination Certificate for Patent No. 4,225,580, issued Sep. 30, 1980, Ser. No. 619,148, Oct. 2, 1975.
Int. Cl.³ A61K *31/74, 31/70*
U.S. Cl. 424—78

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–13** is confirmed.

New claims **14–52** are added and determined to be patentable.

1. A method for cleansing an infected sore which method comprises applying thereto an effective amount of spherical dry polymer particles within the size range of 20 to 500μ, said polymer particles consisting of dextran cross-linked with epichlorohydrin so as to form a three-dimensional network held together by bonds of covalent nature, one gram of which swells in the presence of water to absorb at least 0.5 grams of water but less than 15 grams of water, the swellability of the polymer particles in water being such that the polymeric particles in swollen state have a pore size which permits the penetration thereinto of low molecular weight materials discharging from the sore but which completely or substantially excludes penetration thereinto of materials discharging from the sore that have a molecular weight greater than about 50,000.

B1 4,256,761 (262nd)
ANTIHYPERTENSIVE AMIDES

John T. Suh, Greenwich, Conn.; Jerry W. Skiles, Tuckahoe, N.Y.; Bruce E. Williams, Yorktown Heights, N.Y., and Alfred Schwab, Williston Park, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

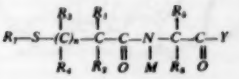
Reexamination Request No. 90/000,359, Apr. 14, 1983.
Reexamination Certificate for Patent No. 4,256,761, issued Mar. 17, 1981, Ser. No. 57,175, Jul. 13, 1979.
Int. Cl.³ A61K *31/36, 31/265;* **C07C** *149/43, 149/40*
U.S. Cl. 424—282

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–18** are cancelled.

New claims **19–37** are added and determined to be patentable.

19. Compounds of the structure



wherein

R_1, R_2, R_3, R_4, R_5 and R_6 are independently hydrogen, lower alkyl, lower alkenyl, or phenyl-lower alkyl, wherein the lower alkyl, lower alkenyl and lower alkynyl groups have up to 6 carbon atoms,

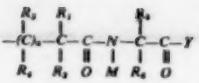
n is an integer from 0 to 4,

M is cycloalkyl, cycloalkyl-lower alkyl, bicycloalkyl, fused arylcycloalkyl, lower alkylphenyl, hydroxyphenyl, methylenedioxyphenyl, bicycloalkyl-lower alkyl, halophenyl or alkylthiophenyl, and contains from 3 to 16 carbon atoms,

Y is hydroxy, lower alkoxy having 1 to 6 carbon atoms or amino,

R_7 is hydrogen, lower alkanoyl, benzoyl, ZS or

wherein the lower alkanoyl contains up to 6 carbon atoms Z is hydrogen, lower alkyl, hydroxy-lower alkyl, amino-lower alkyl, or a radical of the formula



wherein R_1, R_2, R_3, R_4, R_6, n, M and Y are as defined above, and where Y is hydroxy, their non-toxic, pharmaceutically acceptable alkali metal, alkaline earth metal, and amine salts.

B1 4,301,258 (263rd)

CYCLIC ORGANO CARBONATE AND SULFITE COUPLING AGENTS FOR LIVING POLYMERS OF CONJUGATED DIENES

Joginder Lal, Akron, and Michael L. Senyek, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Reexamination Request No. 90/000,403, Jun. 13, 1983.
Reexamination Certificate for Patent No. 4,301,258, issued Nov. 17, 1981, Ser. No. 153,121, May 27, 1980.
Int. Cl.³ C08F *112/00, 132/00, 136/00*
U.S. Cl. 525—334

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 7–9 are cancelled.

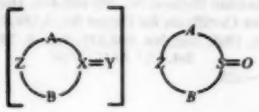
Claims 1, 3, and 6 are determined to be patentable as amended.

Claims 2, 4 and 5, dependent on an amended claim, are determined to be patentable.

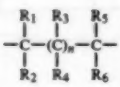
1. A process for the preparation of conjugated diene polymers of broadened molecular weight distribution and negligible cold flow comprising:

(a) polymerizing at least one conjugated diene in the presence of an initiator selected from organoalkali metal or organomagnesium initiators until the consumption of monomer is substantially complete,

(b) reacting the resulting polymer from said step (a) by ring-opening coupling with a compound of the general formula:



wherein, Z is a 1,2-phenylene, 1,2-cyclohexylene, or



grouping wherein n=0 or 1 and R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and are selected from hydrogen or a hydrocarbyl group containing from 1 to 12 carbon atoms and A[, B] and [Y] *B* are oxygen or sulfur [and X is carbon or sulfur, with the stipulation that when X is sulfur, Y must be oxygen], in an amount of from 0.2 to 3 moles of the coupling compound per mole of said organoalkali metal or organomagnesium initiator.

REISSUES

OCTOBER 9, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

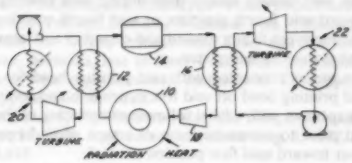
Re. 31,697
RADIOLYTIC DISSOCIATIVE GAS POWER CONVERSION CYCLES

Henry J. Gomberg; John G. Lewis, and John E. Powers, all of Ann Arbor, Mich., assignors to KMS Fusion, Inc., Ann Arbor, Mich.

Original No. 4,229,942, dated Oct. 28, 1980, Ser. No. 913,017, Jun. 6, 1978. Application for reissue Aug. 14, 1981, Ser. No. 292,839

Int. Cl.³ G12D *5/00*

U.S. Cl. 60—644.1 **5 Claims**



1. In a power cycle which includes the steps of adding heat to a working fluid [at high pressure] to raise said working fluid to high temperature and *subsequently* withdrawing heat from said working fluid [at reduced pressure], the improvement wherein said step of adding heat to said working fluid comprises the steps of: (a) chemically dissociating at least a portion of said working fluid by radiolysis at a temperature below the thermal equilibrium temperature of said dissociated working fluid such that said dissociated working fluid is at macroscopic thermal non-equilibrium, and (b) chemically reacting dissociated components of said working fluid with each other to recombine said components and simultaneously heat said working fluid.

Re. 31,698
LOAD-MEASURING DEVICES

Dennis H. Sansome, Sutton Coldfield; Gerald M. Jones, Trimpley, Near Bewdley both of England, and Basily B. Basily, Cairo, Egypt, assignors to National Research Development Corporation, London, England

Original No. 4,285,234, dated Aug. 25, 1981, Ser. No. 96,149, Nov. 20, 1979. Application for reissue Oct. 21, 1982, Ser. No. 435,992

Claims priority, application United Kingdom, Nov. 23, 1978, 45768/78

Int. Cl.³ G01L *5/00*

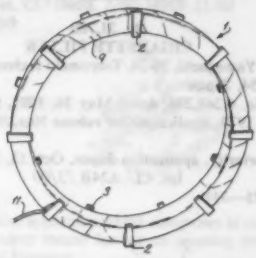
U.S. Cl. 73—862.65 **10 Claims**

11. A load-measuring device comprising a ring-shaped body.

at least three circumferentially-shaped first axial projections presenting sectorially-aligned surfaces operatively mounted so that said surfaces are movable relative to said ring-shaped body in a direction parallel to the axis of said body so as to engage a first of the two axial faces of said ring-shaped body;

at least three circumferentially-spaced second axial projections presenting sectorially-aligned surfaces operatively mounted so that said surfaces are movable relative to said ring-shaped body in a direction parallel to the axis of said body so as to engage the second and opposite of said axial faces of said ring-shaped body at locations staggered relative to those of said first axial projection;

means to detect to strain imposed upon said ring-shaped body when said ring-shaped body is distorted elastically to sectorially-undulating shape by opposed axial loads applied to said ring-shaped body through said first and second axial projections, said device further including parts of said device



separated from said ring-shaped body on and by which the said axial projections are mounted and located.

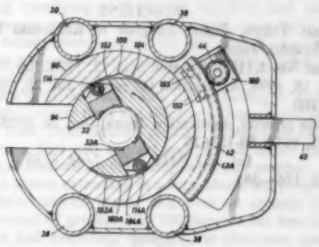
Re. 31,699
BACK-UP POWER TONGS AND METHOD

Emery L. Eckel, Odessa, Tex., assignor to Eckel Manufacturing Company, Inc., Odessa, Tex.

Original No. 4,290,304, dated Sep. 22, 1981, Ser. No. 34,774, Apr. 30, 1979. Application for reissue May 12, 1983, Ser. No. 493,976

Int. Cl.³ B25B *17/00*

U.S. Cl. 73—862.25 **15 Claims**



1. Back-up apparatus for securing a first portion of a tubular member against axial rotation in response to rotation of another portion thereof by a pipe-rotating device and the like, comprising

a frame member having a generally annular configuration and a first *open* throat portion for receiving said first portion of said tubular member,

a ring-like member [fixedly interconnected within] *affixed to* said frame member and having *camming surfaces and* a corresponding second open throat portion for receiving said first portion of said tubular member in cooperation with said frame member,

a plurality of spaced-apart gripping members [radially] movable between said ring-like member and said first portion of said tubular member,

a rotatable cage plate assembly positioned within said ring-like member and having a third open throat portion for receiving said first portion of said tubular member when rotatably aligned with said first and second open throat portions and for carrying said plurality of spaced-apart gripping members,

stop means on said rotatable cage plate assembly for aligning said third open throat portion of said rotatable cage plate assembly with said first and second open throat portions, and

driving means for arcuately moving said cage plate assembly with respect to said ring-like member and for thereby bringing said gripping members into wedgeable engagement between said ring-like member and said first portion of said tubular member.

Re. 31,700

CIGARETTE FILTER

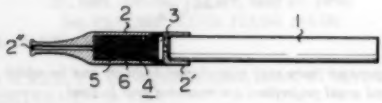
Takeyoshi Yamaguchi, 20-24, Tsurumaki 5-chome, Setagaya-ku, Tokyo 154, Japan

Original No. 4,269,204, dated May 26, 1981, Ser. No. 65,533, Aug. 10, 1979. Application for reissue Nov. 30, 1982, Ser. No. 445,771

Claims priority, application Japan, Oct. 13, 1978, 53-125083

Int. Cl.³ A24B *15/00*

U.S. Cl. 131—341 **12 Claims**



1. A cigaret filter comprising *an effective amount of* dry and active green algae in the form of chlorella incorporated in a columnar carrier of porous material for trapping toxic substances in cigaret smoke while allowing said smoke to pass through the carrier [, said chlorella being of an amount in the range of about 20 to 50 mg. for said carrier of 8×20 mm].

Re. 31,701

PORTABLE LABEL PRINTING AND APPLYING MACHINE

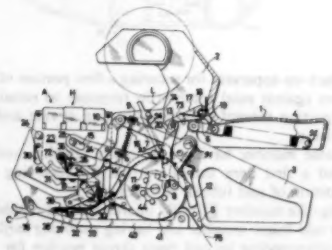
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

Original No. 4,113,544, dated Sep. 12, 1978, Ser. No. 750,845, Dec. 15, 1976. Application for reissue Jul. 20, 1982, Ser. No. 400,160

Claims priority, application Japan, Dec. 20, 1975, 50-151235; Dec. 31, 1975, 50-158620

Int. Cl.³ B41F *1/08, 1/44, 1/38*

U.S. Cl. 156—384 **52 Claims**



1. A portable label printing and applying machine, comprising:

a machine frame; a platen supported by said machine frame; label moving means for moving a label onto said platen to be imprinted;

an operating lever supported by and movable with respect to said machine frame between a first and a second position;

a printing head supported by and movable with respect to said machine frame between a third and a fourth position; said printing head including printing types; at said fourth position of said printing head, said printing types being in position to engage and engaging a label on said platen and imprinting the same;

biasing means operatively connected between said operating lever and said printing head for biasing said printing head away from said third position toward said fourth position as said operating lever is operated toward said second position;

printing head restraining means connected with said printing head for restraining movement thereof toward said fourth position as said operating lever is moving toward said second position;

restraining means release means connected with said restraining means and with said operating lever for moving said restraining means to release said printing head to move to said fourth position when said operating lever has moved a predetermined distance toward said second position, said biasing means then urging said printing head toward said fourth position; at said fourth position, said printing types facing toward and engaging and imprinting a label then on said platen;

return means connected with said printing head for lifting said printing head off said fourth position and away from engagement with a label following imprinting of the label and prior to commencement of return of said operating lever toward said first position thereof.

Re. 31,702

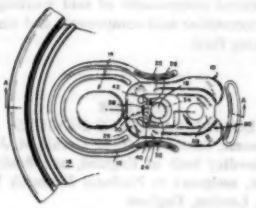
TAB FOR EASY-OPEN ECOLOGY END

Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Original No. 4,148,410, dated Apr. 10, 1979, Ser. No. 873,268, Jan. 30, 1978. Application for reissue Oct. 27, 1980, Ser. No. 201,357

Int. Cl.³ B65D *41/32*

U.S. Cl. 220—269 **13 Claims**



1. A tab of the type affixed to a can end for opening it and comprising:

a unitary structure including

a lifting end;

an opening end opposite said lifting end and spaced from it;

spaced leg members connecting said lifting end and said opening end; and,

a flap extending longitudinally from said opening end toward said lifting end between said spaced leg members, spaced from said spaced leg members and from said lifing end, including an affixing portion by which said flap is affixed to the can end, said affixing portion spaced from said opening end, the width of said flap varying along the length of said flap to define a first bending region extending laterally across said flap adjacent said affixing portion and a second bending region extending laterally across said flap adjacent said opening end, the width of said flap in said second bending region being sufficiently small relative to the width of said flap in said first bending region that after said lifting end has been pulled away from the can, thereby flexing said flap in said first bending

region, when said lifting end is subsequently pushed toward the can end, said flap flexes in said second bending region, whereby no part of said flap is flexed more than once as said lifting end is pulled away from the can and then pushed back towards its original position adjacent the can end.

Re. 31,703

PROCESS OF MAKING PARTICLE BOARD FROM PYROPHOSPHATE TREATED POLYISOCYANATES

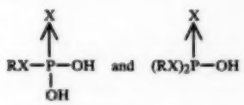
Richard A. Prather; David L. Williams, both of Houston, Tex.; Robert M. Partin, Friendswood, Tex., and Warren J. Rabourn, deceased, late of Deer Park, Tex. (by Hazel L. Rabourn, legal representative), assignors to The Upjohn Company, Kalamazoo, Mich.

Original No. 4,258,169, dated Mar. 24, 1981, Ser. No. 134,219, Mar. 26, 1980. Application for reissue Aug. 2, 1982, Ser. No. 404,415

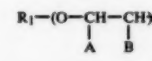
Int. Cl.[3] **B29J** *5/00;* **C08G** *18/38, 18/77*

U.S. Cl. 264—109 **13 Claims**

1. A process for preparing a [liquid, storage-stable, polyisocyanate composition containing a mold release agent formed in situ which process comprises] *particle board wherein particles of organic material capable of being compacted are contacted with a polyisocyanate binder composition containing an internal release agent and the treated particles are subsequently formed into boards by the application of heat and pressure, the process being characterized in that the polyisocyanate binder composition has been prepared by* heating at a temperature in the range of about 60° C. to about 190° C. a mixture of an organic polyisocyanate and from about 1 to about 20 parts, per 100 parts by weight of said polyisocyanate, of an acid phosphate selected from the class consisting of acid phosphates having the formulae



and mixtures of two or more of said acid phosphates wherein, in the above formulae, each R is independently selected from the class consisting of alkyl having at least 3 carbon atoms, alkenyl having at least 3 carbon atoms, aryl, aryl substituted by at least one alkyl group, alkyl substituted by at least one acyloxy group wherein the acyl group is the residue of an aliphatic monocarboxylic acid having at least 2 carbon atoms and



wherein R_1 is selected from the group consisting of alkyl, aryl and aryl substituted by at least alkyl, one of A and B represents hydrogen and the other is selected from the class consisting of hydrogen, methyl, chloromethyl and 2,2,2-trichloroethyl; X is a chalogen selected from the class consisting of oxygen and sulfur; and m is a number having an average value of 1 to 25;

the said heating of said mixture being carried out for a time such that no phase separation occurs upon cooling the reaction mixture to ambient temperature.

Re. 31,704

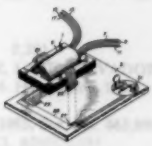
TRANSFORMER HAVING NOVEL MULTIPLE WINDING AND SUPPORT STRUCTURE AND METHOD OF MAKING SAME

Thomas E. Hester, Ft. Wayne, Ind., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Original No. 4,249,229, dated Feb. 3, 1981, Ser. No. 937,466, Aug. 28, 1978. Application for reissue May 10, 1982, Ser. No. 376,638

Int. Cl.[3] **H05K** *7/02;* **H01F** *15/02*

U.S. Cl. 361—399 **15 Claims**



1. The electrical apparatus which comprises in combination:

a metal container means having an opening and a lid for closing said opening;

a printed circuit board of electrically insulative base material containing a plurality of flat electrical conductors on at least one surface thereof;

a first set of spaced electrical terminals and a second set of spaced electrical terminals;

a core of magnetic material forming a magnetic circuit, said core including a center core leg and first and second outer core legs located on opposite sides of said center leg and extending parallel thereto to define therebetween a coil-receiving window;

electrical coil means having an axially extending central passage comprising a first primary winding containing a first multiple number of turns of enamel insulated electrical wire and at least one secondary winding comprising a second multiple number of turns, greater than said first multiple number, of enamel covered wire with said first winding overlying said second winding and said coil including an axially extending passage, said electrical coil means being mounted along the axis thereof on said center core leg with a clearance space between the outer periphery thereof and each of said outer core legs;

an elongate relatively flat cable means having a width substantially greater than the thickness thereof and containing at least three spaced parallel conductors extending between a first and second end of said cable means in electrical insulated relationship with one another;

said cable means extending in a loop about the periphery of said electrical coil means and over an arcuate distance therearound of greater than 180 degrees but less than 360 degrees and extending through the clearance space between said periphery of said coil means and at least one of said outer core legs;

means electrically and mechanically coupling said first end of said cable means to corresponding terminals in said first set of electrical terminal means on said printed circuit board;

and means electrically and mechanically coupling the conductors at said second end of said cable to corresponding ones of said electrical terminals in said second set of electrical terminal means; and wherein each of said core, coil means, cable and printed circuit board being disposed within said container means with said core and electrical coil means supported on a surface of said printed circuit board;

a plurality of electrical components mounted on said circuit board in an electrical circuit, and means, including said plurality of flat electrical conductors on said circuit board, adapted to electrically interconnect said electrical components in circuit with each of said primary and secondary winding of said coil means, and said first and second set of electrical terminal means; and electrically insulative potting material disposed within said container for encasing said circuit board, core, coil means, cable and electrical components therewithin.

PLANT PATENTS

GRANTED OCTOBER 9, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,290

CARNATION PLANT

Leonard E. Carrier, 1911 Sheridan Rd., Encinitas, Calif. 92024

Filed Sep. 27, 1982, Ser. No. 425,117
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct cultivar of carnation plant designated Jaunita substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very vigorous and free-breaking plant habit, and strong and straight stems; superior resistance to soil-borne diseases such as *Fusarium oxysporum* and *F. roseum*, and rots such as damping off and water molds, small serrated flowers which open fully without bursting the calyx and causing "splits"; a distinctive and attractive maize yellow flower color which fades evenly and beautifully; and good heat tolerance which is superior to that of the parent lines and the variety known as "Sim".

5,291

PLUM TREE, LATE SALVADOR

John M. Garabedian, 3104 Huntington Blvd., Fresno, Calif. 93702

Filed Feb. 4, 1983, Ser. No. 463,895
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree substantially as illustrated and described and broadly characterized by the late season of its fruit's maturity, approximately with that of Roysum (U.S. Plant Pat. No. 2,619), but differing from Roysum in its regular and productive bearing of dark red to dark purplish-red fruit having a heavier, blue-gray bloom and relatively mild good flavor.

5,292

AFRICAN VIOLET

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540

Filed Mar. 9, 1983, Ser. No. 473,623
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new African violet plant, substanially as shown and described.

PATENTS

GRANTED OCT. 9, 1984

ERRATA

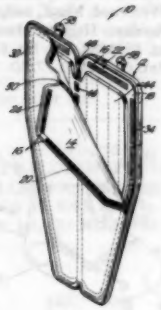
For CLASS	See PATENT NO.
446–429	4,475,303
446–465	4,475,304
446–463	4,475,305
026–003	4,475,417
087–013	4,475,419
297–051	4,475,757
384–572	4,475,777
422–144	4,476,160
562–494	4,476,248
525–462	4,476,275

PATENTS

GRANTED OCTOBER 9, 1984

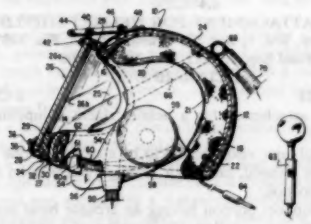
GENERAL AND MECHANICAL

4,475,247
COMBINATION GUN CASE AND PROTECTIVE APPAREL
Robert M. Lee, c/o Hunting World 16 E. 53rd St., New York, N.Y. 10022
Filed Jun. 14, 1982, Ser. No. 388,348
Int. Cl.³ F41H *1/02*
U.S. Cl. 2—2.5 **16 Claims**



1. A combination gun case and protective apparel comprising an outer shell, an inner liner attached to the inside surface of the outer shell, releasable means, mounted along the periphery of the outer shell, for securing the outer shell and the liner in a folded position to define a compartment for housing a gun; bullet resistant means composed of an anti-ballistic material mounted to at least one of the outer shell and the inner liner; and means for securing bullet resistant means to the body of a wearer so as to provide full torso protection from frontal assault by bullets, shot and projectiles.

4,475,248
EXPLOSIVE ORDINANCE DISPOSAL HELMET
Richard L'Abbe; Andre M. St. Laurent, both of Ottawa; James A. Newman, Gloucester, and Brian M. Gallup, Kanata, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada
Filed Jun. 1, 1982, Ser. No. 383,765
Int. Cl.³ F41H *1/04*
U.S. Cl. 2—2.5 **10 Claims**



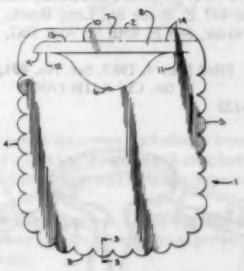
1. A ballistic helmet for use by bomb disposal personnel comprising a rigid shell, a shock attenuating liner in said shell, and a plurality of layers of ballistic fabric forming an outer covering for said shell, said helmet being shaped to cover the entire head of a wearer and provide a chin protector portion, a frontal opening in said helmet adapted to be covered by a readily removable, transparent plastic face shield, an anchor means on said chin protector having a slot to receive a tab on said visor and a bracket on an upper edge of said visor releasably engaged by an elastic member one of which is secured to said helmet and a supply of air to the interior of said helmet.

4,475,249
AIR CLEANING MAGNETIC ATTACHMENT FOR A WELDER'S FACE MASK
Kenneth W. Golay, P.O. Box 423, Ardmore, Okla. 73401
Filed Sep. 23, 1982, Ser. No. 422,428
Int. Cl.³ A42B *1/00*; A61F *9/00*
U.S. Cl. 2—8 **3 Claims**

1. In a welder's face mask including a panel portion vertically and horizontally at least coextensive with corresponding dimensions of a welder's face and provided with a welding light eye protective lens covered opening in its upward end portion and having an inner surface adjacent a welder's face when in use, the improvement comprising:

a layer of magnetic material bonded to the inner surface of said panel portion and extending upwardly from its depending end to at least the depending limit of the lens covered opening.

4,475,250
DISPOSABLE BIB
Bruce A. Savin, and Hollis C. Savin, both of 27 Stonewood Ct., Racine, Wis. 53402
Filed Apr. 25, 1983, Ser. No. 488,419
Int. Cl.³ A41B *13/10*
U.S. Cl. 2—49 R **5 Claims**



1. A disposable bib, comprising a body of flexible sheet material having a top edge, a bottom edge and opposite side edges, said body having a neck opening formed therein at its upper end spaced from said top edge that defines a transversely extending upper edge margin portion and a cut line formed in said margin portion for providing a pair of tie stips for tying said body around a neck, a first portion of said cut line communicating with said opening and extending transversly therefrom to a point adjacent to and spaced from one of said side

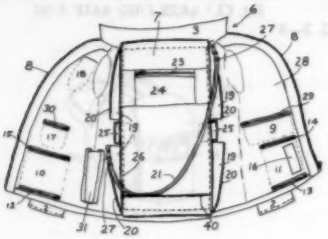
edges, and a second portion of said cut line extending upwardly from said point and transversely across said portion to communicate with the other of said side edges, said sheet material including a waterproof layer on one side thereof and an absorbent layer of randomly orientated non-woven fibers on the other side thereof.

4,475,251

WEARABLE PURSE

Patricia A. Hopkins, Rte. 1, Box 7, Philomath, Oreg. 97370

Filed Dec. 28, 1982, Ser. No. 441,620
Int. Cl.³ A41D *1/00, 3/02*
U.S. Cl. 2—94 **10 Claims**



1. A garment convertible to a carrying purse and vice versa comprising:

a flexible body member comprising at least three panels having upper and lower portions and inner and outer surfaces,

said panels in garment form consisting of a central back panel and a panel joined to said back panel on each side thereof arranged to be worn as a garment and to be folded outwardly in overlapping relation,

a purse panel secured to the inner surface of said back panel and having an intermediate foldable area arranged to form the sides of a purse and enclose portions of said panels when said purse panel is folded at said foldable area,

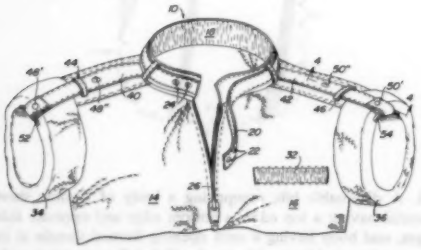
and means on each side of said purse panel including releasable fastening means cooperating to form end walls of a purse when said purse panel is folded at said foldable area.

4,475,252

GARMENT HAVING ADJUSTABLE SLEEVE MEANS

Eliot Peyser, 447 E. Beech St., Long Beach, N.Y. 11561, and Miriam Peyser, 500 E. 85th St. Apt. 10G, New York, N.Y. 10028

Filed May 4, 1983, Ser. No. 491,500
Int. Cl.³ A41B *1/08*
U.S. Cl. 2—125 **4 Claims**



1. A garment for the torso and arms, comprising:

(a) a body portion,

(b) sleeves attached to the body portion at the shoulders thereof which extend below the elbow of the wearer and which may be rolled up to the shoulders of the garment,

(c) fastening means comprising a strip fixedly attached at one end to each shoulder of the garment the other end of the strip being doubled back and removably attached to the strip so as to form a bight adjacent to the other end, and

(d) a loop on the inner surface of each sleeve which cooperatively engages the bight of the strip on the respective shoulder for retaining the sleeves in position when the sleeves are rolled up.

4,475,253

GARMENT WITH A CONVERTIBLE CUFF

Regina G. Laveckis, Westwood, Mass., assignor to The William Carter Company, Needham Heights, Mass.

Filed Aug. 15, 1983, Ser. No. 523,268
Int. Cl.³ A41D *27/10*
U.S. Cl. 2—269 **3 Claims**

1. A garment comprising

a pants leg having a convertible cuff at the end of said leg,

said convertible cuff comprising bottom and top pieces of cloth material sewn together at their sides along two seams, said seams terminating at a position adjacent the base of the toes to provide a forward end opening exposing the toes,

said bottom piece having a folded-over heel portion with two folds spaced from an end thereof to provide three flat layers of overlapping cloth when not extended and extendible to form a heel engaging covering,

one of said pieces having a toe portion folded rearwardly and outwardly over itself and extending rearwardly to a position short of said heel portion, said folded over toe portion being joined to said side seams along its margins and being capable of being reversed to enclose said forward opening and overlie the forward portion of the other of said pieces.

4,475,254

VISOR ATTACHMENT FOR HELMET SHIELD

William P. Bay, Rte. 1, Box 53, Ormond Beach, Fla. 32074

Filed Sep. 7, 1982, Ser. No. 415,698
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—424 **8 Claims**

1. A visor attachment for a helmet shield comprising in combination:

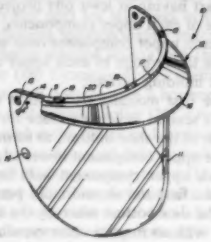
a flexible polymer visor shaped to be attached to one edge portion of a shield, said visor having a bill portion and a support portion;

said visor support portion having an arcuate band support portion shaped to follow the contour of a shield when flexed thereabout and said visor support portion having openings therein;

means for attaching said support portion to a shield, including a plurality of spring clips passing through said visor support portion openings for locking one edge portion of said shield to said visor support portion, when said visor and shield are flexed to follow an arcuate contour, thereby converting said shield to a visor/shield combination; and

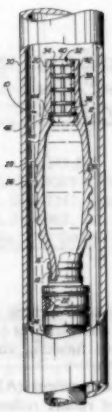
each visor support portion opening having a support mem-

ber therein with a tongue protruding therefrom adjacent to a shield, whereby each said spring clip snaps over said



support member and tongue on one side and adjacent to the shield on the other side.

4,475,255
PIPE FLUSHING DEVICE
George Tash, 18658 Chase St., Northridge, Calif. 91324
Filed Jul. 15, 1983, Ser. No. 514,290
Int. Cl.³ B08B *9/02*
U.S. Cl. 4—256 **11 Claims**



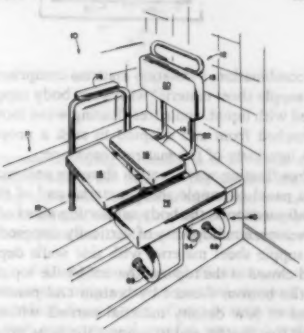
1. An improved pipe flushing device, said device comprising, in combination:

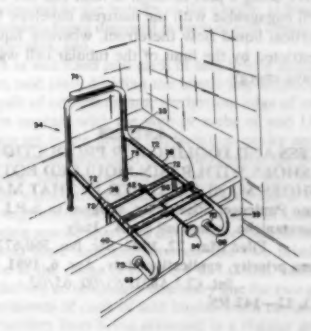
(a) an elongated elastomeric hollow tubular member having a generally central passageway extending through the length thereof, a middle portion which is radially expansible under water pressure, an open rear inlet end and an open front outlet end;

(b) a hose connector connected in sealing engagement with said rear inlet end; and

(c) a valve in said front outlet end, said valve comprising a cage having a rear closure plate disposed across said outlet end and secured in a transverse groove in said tubular member outlet end, said groove being of a length longer than the thickness of said plate, said valve having open sides and front, said outlet end holding said valve in a fixed position to close said outlet when said tubular member is in the relaxed state and permitting longitudinal movement of said valve cage, while retaining said plate in said groove, upon expansion under water pressure of said tubular member, said expansion also permitting water to by-pass said closure plate through said groove and pass through said cage sides and front as a water jet, pulsations of said jet setting up mechanical vibrations, said jets and pulsations being effected by alternate expansion and contraction of said tubular member under water pressure to unclog a pipe.

4,475,256
SHOWER TRANSFER BENCH
John Hatala, Clifton, N.J., assignor to Temco Home Health Care Products, Inc., Passaic, N.J.
Filed Mar. 21, 1983, Ser. No. 477,158
Int. Cl.³ A61H *33/02*; A47K *3/00, 3/02, 3/022*
U.S. Cl. 4—562 **13 Claims**





1. In a shower bench apparatus, including a bench having at least two feet and a first and a second rail attached to said feed and a chair unit attachable to said rails, the improvement comprising:

stationary hook bracket means rigidly attached to the underside of said chair unit for selective engagement with one of said bench rails;

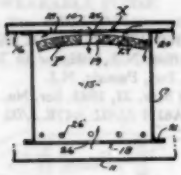
stationary cradling bracket means rigidly attached to the underside of said chair unit for selective engagement with the other bench rail; and,

locking means attached to said cradling bracket means for selectively locking said chair unit with respect to at least one of said rails, said locking means comprising a threaded means locatable below the center of said rail when said chair unit is engaged with said rail for selectively occupying space in said cradling bracket means thereby preventing said rail from escaping from said cradling bracket means.

4,475,257
WAVE MOTION ABSORBER FOR WATER BED MATTRESSES

Raymond M. Phillips, 2566 Tuna Canyon Rd., Malibu, Calif. 90290

Filed Jan. 26, 1982, Ser. No. 342,738
Int. Cl.³ A47C 27/08
U.S. Cl. 5—450 21 Claims



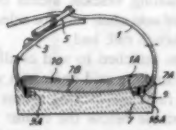
1. In combination, a flotation mattress comprised of an envelope of supple sheet material with a top body supporting panel and filled with liquid, and a free floating wave motion absorber unit detached from and adapted to seek a proper operating position interiorly of the mattress envelope;

said free floating wave motion absorber unit including, a top end panel of supple sheet material and of the same plan configuration as the body supporting panel of the mattress envelope, a multiplicity of vertically disposed tubular cells of supple sheet material with side walls depending from and closed at the top end thereof by the top end panel and at the bottom thereof by bottom end panels, a flotation plate of low density material carried within the cell to float free therein and to support the same proximate to the top body supporting panel of the mattress envelope, and there being a port through at least one end of the tubular cell engageable with the mattress envelope for restricted vertical liquid flow therefrom, whereby liquid motion is restricted by the limit of the tubular cell walls to absorb wave energy.

4,475,258
PROCESS AND TOOLING FOR PRODUCTION OF OPEN TOP SHOES WITH RESIN MOULDED BOTTOM, AND SHOES MANUFACTURED IN THAT MANNER

Ermanno Panicucci, Pisa, Italy, assignor to A.P.I. Applicazioni Poliuretaniche Industriali S.p.A., Italy

Filed Mar. 22, 1982, Ser. No. 360,672
Claims priority, application Italy, Apr. 6, 1981, 9380 A/81
Int. Cl.³ A43D 65/00, 65/02
U.S. Cl. 12—142 RS 8 Claims



1. A method of manufacturing an open shoe having a plurality of upper components each with a lower edge secured in a bottom of molded synthetic material, each lower edge including at least one hole therein, the method comprising:

providing a first mold part having a first molding surface for forming a foot bearing surface of the shoe bottom, the first mold part having at least one projection for engaging in the hole of each upper components;

hooking each upper component onto one of the projections with the lower edge of each upper components adjacent the first molding surface;

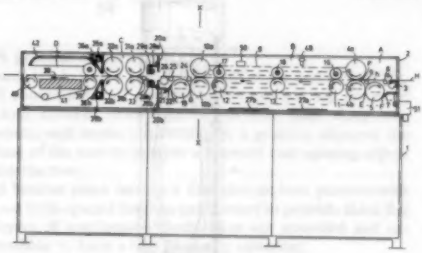
mating the first molding part with a second molding part having a second molding surface for forming a periphery and base of the shoe bottom, to form a closed mold space with the upper component lower edges in the mold space and each upper component held in a cleft-like gap between the first and second mold parts; and

molding the shoe bottom whereby the foot bearing surface is formed with an imprint corresponding to each first mold part projection and extending through each hole of the upper components respectively.

4,475,259
ULTRASONIC CLEANING APPARATUS

Mineo Ishii, Fukuyama; Kasei Arimoto, Kasaoka, and Teruyuki Nakano, Fukuyama, all of Japan, assignors to Ishii Hyoki Co., Ltd., Japan

Filed Jun. 7, 1982, Ser. No. 385,608
Claims priority, application Japan, Jun. 9, 1981, 56-89094
Int. Cl.³ B08B 3/12
U.S. Cl. 15—102 3 Claims



1. An ultrasonic cleaner wherein a processing cistern is divided into a carry-in compartment (A), a cleaning compartment (B), a water-wash finishing compartment (C), and a drying compartment (D),

(1) said carry-in compartment (A) comprising an infeed roller (3), a pair of rubber rollers (4*a* and 4*b*) mounted vertically facing each other at a predetermined forward position of said infeed roller, and a cleaning solution sealing roller rotatable by the lower rubber roller of said pair, the contact surface between said pair of rubber rollers (4*a* and 4*b*) forming a carry-in port for washing in the horizontal direction and simultaneously forming a barrier for sealing in cleaning solution, said cleaning solution sealing roller (5) forming another sealing barrier with the surface of said lower roller (4*b*) at the side of said carry-in compartment (A), a horizontal plate (6) in said compartment (A), a resilient tongue (7) on said plate (6), said sealing roller (5) forming another sealing barrier by coming into pressure contact with said tongue (7) at the top of said horizontal plate (6), said plate being installed lower than said infeed roller (3) at the inlet side of said carry-in compartment (A),

(2) said cleaning compartment (B) comprising a pair of rubber rollers (10*a* and 10*b*) mounted vertically facing each other at a predetermined forward position of said pair of rubber rollers (4*a* and 4*b*) in said compartment (A), a cleaning solution sealing roller (19) rotatable by the lower rubber roller (10*b*) of said pair, transfer rollers (11 and 12) positioned between said pairs of rubber rollers (4*a*,

4*b* and 10*a*, and 10*b*), conveying belts (14 and 15) positioned over said transfer rollers and a delivery roller (26) positioned rearward of said sealing solution roller (19), the contact surface of said pair of rubber rollers (10 *a* and 10*b*) forming a carry-out port for washings in the horizontal direction, said cleaning solution sealing roller (19) forming a barrier for cleaning solution sealing with the lower roller (10*b*) and roller (19) forming another sealing barrier by coming into pressure contact with a horizontal plate (21) disposed below said delivery roller (26), a resilient tongue (22) being disposed at the top of said horizontal plate (21) and positioned lower than said delivery roller (26) at the outlet side of said cleaning compartment (B), said conveying belts (14 and 15) being horizontally stretched and being rotatable at the same level as or lower than the contact faces between said rubber rollers (4*a* and 4*b* or 10*a* and 10*b*), ultrasonic vibrators (27*a* and 27*b*) disposed under said rotatable conveying belts (14 and 15), and a cleaning solution at a height sufficient to immerse said conveying belts (14 and 15) in said cleaning solution, and

(3) said water-wash finishing compartment (C) comprising water pipes (29*a* and 29*b*) mounted above and below the work path at a predetermined fixed interval and oppositely faced, and a pair of vertically spaced squeezing rollers forward of said pipes and defining the work path therebetween on horizontal axes.

4,475,260

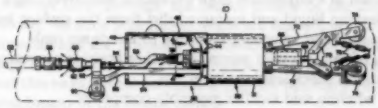
PIPELINE SERVICING TOOL

Richard D. Beck, P.O. Box 7247, Salem, Oreg. 97303

Filed Jan. 31, 1983, Ser. No. 462,528

Int. Cl.³ B08B *9/02*

U.S. Cl. 15—104.12 **9 Claims**



1. The pipeline servicing tool arranged to be pulled through a pipeline and arranged for connection to a pressured liquid source, said tool comprising

(a) a fluid driven motor assembly having leading and trailing ends and having a drive portion,

(b) connector means on said motor assembly for moving it through a pipe to be cleaned,

(c) an exterior tubular housing on said motor assembly arranged to be driven rotatably on said motor assembly by fluid pressure,

(d) said housing having an open leading end into which said connector means extends for securement to said motor assembly,

(e) said leading end comprising a circular toothed cutting edge,

(f) fluid transmitting means connected to said motor assembly for admitting pressured liquid to said motor assembly from a pressured liquid source,

(g) said cutting edge being dimensioned and arranged to clear a path through a pipe larger in diameter than trailing portions of said motor assembly.

4,475,261

HAIRBRUSH

Takeo Okumura, and Tsutomu Muraoka, both of Funabashi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,852

Claims priority, application Japan, May 10, 1982, 57-67705[U]

Int. Cl.³ A46B *3/16*

U.S. Cl. 15—195 **15 Claims**

1. A hairbrush including a handle, a brush head extending from said handle, said brush head having a bristle implantation surface having a plurality of spaced-apart bristle implantation cavities formed therein, and a plurality of bristles implanted in said bristle implantation cavities, wherein the improvement comprises:

a plurality of U-shaped elongated filaments, each of said filaments comprising a pair of parallel, upwardly extending legs which form a pair of said bristles and a bottom web which connects said parallel legs, said web and the adjacent portions of said legs being disposed in the associated bristle implantation cavity with the web being located adjacent to the bottom of the cavity, at least one of said filaments being disposed in each of said bristle implantation cavities; and

a plate set in and fixed into each of said bristle implantation cavities, said plate dividing the bristle implantation cavity into a pair of compartments, the bottom edge of said plate being in contact with the web or webs of said U-shaped filaments set in the bristle implantation cavity and securing the filament associated therewith against the bottom of the bristle implantation cavity, whereby the bristles of each pair extend from adjacent compartments of the same bristle implantation cavity, the two bristles of each of said pairs being spaced apart in a direction perpendicular to the associated plate disposed between said two bristles by a distance in the range of from 0.4 to 1.2 mm, each of said plates defines an imaginary boundary line for two adjacent compartments of each of said implantation cavities, all of said boundary lines being arranged in a regular geometrical pattern adapted to minimize hair entanglement on said bristles and maximize brushing effectiveness when said hairbrush is used to brush hair.

4,475,262

PUSH TYPE CURLING BROOM

Eric D. Downer, 116 Purvis Crescent, Scarborough, Ontario, Canada M1B 1M9

Filed Apr. 12, 1982, Ser. No. 367,548

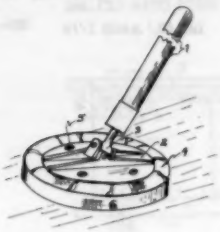
Claims priority, application Canada, Nov. 19, 1981, 390406

Int. Cl.³ A46B *15/00*; A63B *67/14*

U.S. Cl. 15—210 R **3 Claims**

1. A push broom for the game of ice curling comprising, a rigid sweeping head provided with a planar underside covered with a fabric capable of producing heat of friction when simultaneously pressed against and moved across a sheet of ice, the fabric material being turned up over all sides and the top of the sweeping head, a centrally located plate secured to the top side of the sweeping head and overlying the fabric turned there-

fore, an elongated rod-like handle secured by means of a universal joint to the symmetrical center of the plate and the sweeping head, the universal joint allowing the handle to assume substantially any angle between 0 degrees and 90 degrees with respect to the plane of the sweeping head while preventing relative rotational movement between the axis of the handle and the axis of the sweeping head perpendicular to the plane thereof.



4,475,263

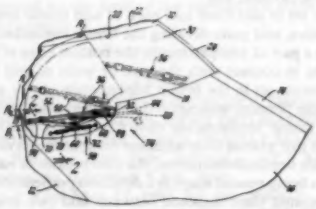
WINDSHIELD WIPER SYSTEM

Leonard A. Lystad, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1983, Ser. No. 508,005

Int. Cl.³ B60S 1/04

U.S. Cl. 15—250.19 **3 Claims**



1. On a vehicle body including a windshield having a lower edge, wiper means on said body including blade means movable generally perpendicular to said windshield and parallel thereto in a first arc to wipe said windshield and in a second arc to a depressed park position below said lower edge, and spring means biasing said blade means against said windshield, the combination comprising, guide means on said body, means on said body defining a motion path for said guide means in a plane forming an acute angle with said windshield for movement of said guide means between an extended position outboard of said windshield and a retracted position below said lower edge, cam means between said guide means and said blade means operative upon movement of said blade means into said second arc toward said depressed park position with said guide means in said extended position to lift said blade means off of said windshield, and means operative to thereafter hold said blade means against said guide means as said blade means moves to said depressed park position so that said blade means is guided by said guide means in said plane to said depressed park position when said guide means achieves said retracted position.

4,475,264

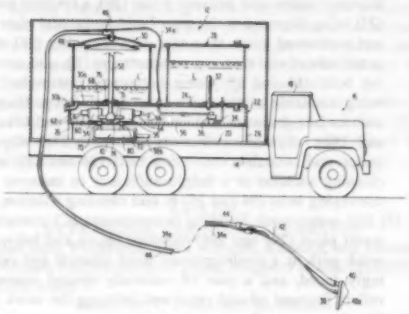
DUAL INLET MUFFLER ASSEMBLY FOR TRUCK HOT WATER VACUUM EXTRACTION MACHINE

Rainer R. Schulz, Sparks, Nev., assignor to Parise and Sons, Inc., Sparks, Nev.

Filed May 23, 1983, Ser. No. 497,343

Int. Cl.³ A47L 11/30, 9/00

U.S. Cl. 15—300 A **4 Claims**



1. A dual inlet muffler assembly for a truck mounted hot water vacuum extraction machine, said machine compris- ing:

a sealed dirty water vacuum dump tank connected via a hose to a vacuum pick up wand, said wand terminating in a vacuum pick up head having a vacuum slot open to the interior of the wand such that the cleaning liquid and entrained dirt from a surface being cleaned may be returned to the dump tank under vacuum pressure applied to said dump tank,

a first motor driven vacuum pump operatively connected to said dump tank, and

a second motor driven vacuum pump connected to said dump tank for bringing the pressure of the dump tank down to a sufficiently high vacuum to effectively suck the cleaning liquid and entrained dirt from the surface being cleaned and returning the same to the dump tank,

each of said vacuum pumps including positive air pressure exhaust pipes leading therefrom,

and wherein said muffler assembly comprises:

a hollow muffler body,

a first muffler exhaust pipe extending completely through said body and having an inlet end sealably connected to said first vacuum pump exhaust pipe,

a second muffler exhaust pipe having an inlet end sealably connected to said second vacuum pump exhaust pipe and extending into said hollow bod and being dead ended therein,

perforations within said first muffler exhaust pipe and said second muffler exhaust pipe over portions internally of said body, and

a mass of sound deadening fibers filling the interior of said hollow body about said muffler exhaust pipes;

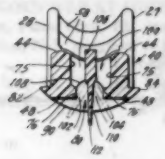
whereby, exhaust air from said first pump exhausts with little head loss through said first muffler exhaust pipe, said exhaust air from said second pump transfers internally of said muffler body from said second muffler exhaust pipe to said first muffler exhaust pipe through said pipe perforations, and wherein said perforations permit air flow to and from said muffler exhaust pipes and said hollow body to effectively muffle the sound of exhaust gas prior to discharge to the atmosphere from the end of said first exhaust pipe.

4,475,265

SHOE ATTACHMENT FOR WET/DRY ELECTRIC VACUUM CLEANER

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Jun. 13, 1983, Ser. No. 503,683
Int. Cl.³ A47L 9/02
U.S. Cl. 15—414 8 Claims



1. A shoe attchment for the intake of a suction device, like a vacuum cleaner, or the like,

wherein the suction device includes an intake conduit, means for supplying suction force to the intake conduit, and the intake conduit having an end having an intake orifice defined in it into which material is sucked by the suction force; means communicating with the intake conduit for receiving material sucked into the intake conduit; the intake conduit having a pair of opposite, spaced apart walls extending down to the intake orifice which are shaped and placed for defining the intake orifice as a relatively narrow opening measured along one dimension of the intake orifice and as a wide opening measured along a second dimension transverse to the one dimension;

the shoe attachment being separate from and insertable in the intake orifice; the shoe attachment comprising a pair of opposite, spaced apart, upstanding walls extending along the long dimension of and also into the intake orifice, a bottom surface extending beneath the end of the intake conduit at which the intake orifice is defined, the shoe attachment walls standing up from the bottom surface, whereby those walls and the bottom surface together close off flow through the intake orifice of the suction device; the shoe attachment walls are shaped, are of such material and are normally biased so that those walls engage the inside surfaces of the walls of the intake conduit and this engagement serves as means for retaining the shoe attachment in the intake orifice;

an inlet opening through the bottom surface and defined by and extending between the walls of the shoe attachment and communicating into the intake conduit, wherein the inlet opening is narrower along the same one dimension than the intake orifice for increasing the air speed and/or the suction force at the inlet opening, as compared with the air speed and/or suction force that would be present at the intake orifice were the shoe attachment absent;

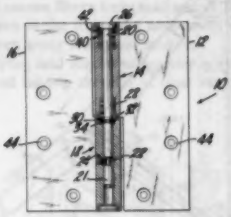
a blade located in the space between and spaced from both of the walls of the intake conduit and the blade extending along the long dimension of the inlet opening and dividing the inlet opening into two sections at opposite sides of the blade; the blade being of the same material as and integrally formed in one piece with the shoe attachment; the blade being sufficiently flexible at the shoe attachment and extending such length down beneath the bottom surface of the shoe attachment that the blade may be flexed in one direction against the bottom surface at one side of the inlet opening for closing off one of the two sections of the inlet opening and may also be flexed in the opposite direction against the bottom surface of the shoe attachment at the opposite side of the inlet opening for closing off the other of the two sections of the inlet opening.

4,475,266

NON-HANDED TWO KNUCKLE HINGE

Charles R. Suska, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed May 24, 1979, Ser. No. 42,020
Int. Cl.³ E05D 5/12, 11/03
U.S. Cl. 16—273 16 Claims



1. A non-handed two knuckle hinge comprising a pair of adjacent hinge leaves, axially aligned hinge knuckles formed respectively on the adjacent edges of said hinge leaves, an axially extending bore in each said knuckle for receiving a pintle, attachment means for the leaves adapted to be used to attach them to a door and jamb, the first hinge leaf adapted to be attached to either of said door or jamb, and the second hinge leaf adapted to be attached to the other of said door or jamb, a pintle extending through the bore of the first hinge knuckle on the first hinge leaf and into the bore of the second hinge knuckle on the second hinge leaf, said pintle having a pintle head of enlarged cross section at the outer end of said first knuckle, about which pintle said first hinge knuckle pivots, and means securing said pintle in said second hinge knuckle; first bearing means between said hinge knuckles for acting as a vertical thrust bearing when a door is attached to the first hinge leaf and the second hinge leaf is attached to a jamb in one of a right-handed or left-handed installation, and second bearing means between said pintle head and said first hinge knuckle for acting as a vertical thrust bearing when a door is attached to the second hinge leaf and the first hinge leaf is attached to a jamb in the other of a right-handed or left-handed installation, whereby said hinge may be used interchangeably in left-handed and right-handed door installations and inverted in either type of installation without affecting the operation of the hinge.

4,475,267

SHOCK ABSORBING BRACKET FOR A FALLFRONT CABINET

Richard A. Hathaway, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,734
Int. Cl.³ E05D 11/06; E05F 1/08
U.S. Cl. 16—288 5 Claims

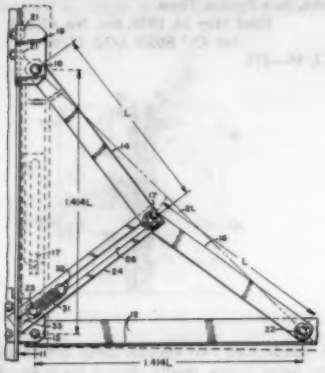
1. A shock absorbing bracket apparatus for a cabinet and fallfront panel assembly, the panel being hinged to the cabinet along a bottom edge of the panel, comprising:

a bracket formed as a pair of rigid links hinged together at adjacent ends and to the cabinet and panel, respectively, at the other ends, so as to fold in redoubled fashion into said cabinet when the panel is closed and to unfold to a position of mutual rectilinear alignment to support the panel in horizontal position when opened;

a third rigid link and at one end thereof a first sliding hinge connection to at least one of said pair of links and at the other end of the third link a second hinge connection to the cabinet-panel assembly;

one of said hinge connections being a sliding resilient con-

nection spring-loaded to resist the full opening of said pair of links and the rectilinear alignment thereof;



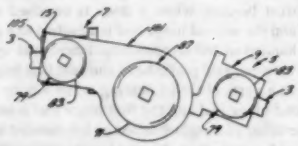
whereby the rigidity of said third link ensures the folding thereof along with said pair of links in redoubled fashion into said cabinet when the panel is closed.

4,475,268

CLOSURE HINGE IMPROVEMENTS

Henri M. R. Labelle, Cornwall, Canada, assignor to Martinray Industries Ltd., Cornwall, Canada

Filed Dec. 16, 1981, Ser. No. 331,385
Int. Cl.³ E05D *1/04*
U.S. Cl. 16—355 5 Claims



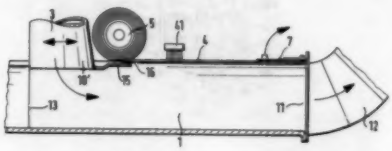
1. An assembly for rotatably joining together a pair of panels in a folding closure, the assembly having a hinge and a separate pair of rigid links; said hinge comprising: a first elongated hinge member having two parallel long sides and two parallel short ends extending transverse to said long sides, means on one of said long sides of said first hinge member for use in connecting said first hinge member to one of said panels, and curved hinge sections on another of said long sides; a second elongated hinge member having two parallel long sides and two parallel short ends extending transverse to said long sides of said second hinge member, means on one of said long sides of said second hinge member for use in connecting said second hinge member to another of said panels, and curved hinge sections on another of said long sides of said second hinge member; said curved hinge sections on said another of said long sides of said two hinge members being interconnected to rotatably connect said hinge members; a first of said rigid links being located at one end of said hinge with one end of said first link being connected to one of said short ends of said second hinge member and with its other end being connected to an end of said curved hinge sections of said first hinge member; a second of said rigid links being located at another end of said hinge with one end of said second link being connected to another of said short end of said second hinge member and with its other end being connected to another end of said curved hinge sections of said first hinge member; both of said links extending transverse to said long sides of said hinge members.

4,475,269

SUCTION DUCT FOR TEXTILE MACHINES

Georg Goldammer, Gaimersheim, Fed. Rep. of Germany, assignor to Schubert & Salzer Aktiengesellschaft Maschinenfabrik, Ingolstadt, Fed. Rep. of Germany

Filed Jan. 21, 1983, Ser. No. 460,120
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206257
Int. Cl.³ D01G *7/10*; B65G *53/26*
U.S. Cl. 19—80 R 13 Claims



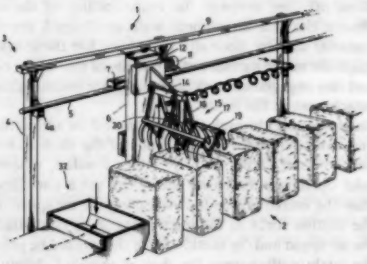
1. A suction duct for textile machines, in particular for a bale-opener, said suction duct possessing a stationary connection-opening and a movable connection-opening which is located in a longitudinal side of the suction duct and is a portion of a longitudinal slot which can be closed by means of a flexible cover-strip, one end of this strip being fastened at a fixed point, wherein the other end of the cover-strip (4) is fastened to a take-up reel (5), this reel being mounted on a carriage (21,80) which can be moved along the suction duct (1).

4,475,270

CONTROL DEVICE FOR OPENING FIBER BALES

Hubert A. Hergeth, Dülmen, Fed. Rep. of Germany, assignor to Hergeth Hollingsworth GmbH, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,377
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124569
Int. Cl.³ D01G *13/00*
U.S. Cl. 19—81 7 Claims



1. A control device for opening fiber bales arranged in a row comprising oscillating carriage means for moving a row of fiber bales along a predetermined path of travel, grabbing means for selectively grabbing and releasing fibers from individual bales of the row of bales, means for mounting said grabbing means for up and down movement relative to said carriage, pneumatic control means for (a) pneumatically oscillating said carriage means, (b) pneumatically operating said grabbing means and (c) pneumatically moving said grabbing means up and down, switching means including a program wheel for controlling the operation of said pneumatic control means, said program wheel including a plurality of spaced peripheral teeth defining notches therebetween for receiving a nose of a ratchet, means for imparting motion to the ratchet to

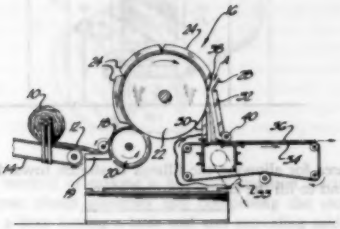
move said program wheel through a predetermined angle, a plurality of peripherally spaced contact cams carried by said program wheel, and switching valve means operated by each contact cam for initiating the cycling of said pneumatic control means.

4,475,271

PROCESS AND APPARATUS FOR PRODUCING UNIFORM FIBROUS WEB AT HIGH RATE OF SPEED

Ernest G. Lovgren, Palos Park, Ill., and Prashant K. Goyal, Princeton Junction, N.J., assignors to Chicopee, New Brunswick, N.J.

Filed Apr. 29, 1982, Ser. No. 373,083
Int. Cl.³ D01G *15/40, 15/46*
U.S. Cl. 19—105 **17 Claims**



1. A process for producing a highly uniform web of fibers at high rates of speed, said method comprising the steps of:

(1) feeding an array of fibers to a rotating toothed roll adapted for opening fibers, to open the fibers;

(2) feeding the opened fibers from said rotating toothed roll to the surface of a rotating toothed cylinder at a first position;

(3) carrying the fibers around the periphery of said cylinder from said first position to a second position spaced a predetermined distance around said periphery from said first position, wherein during at least a portion of said predetermined distance said fibers are brought into operative contact with combing means to individualize said fibers;

(4) substantially uniformly dispersing the individualized fibers from the rotating toothed cylinder at said second position into an air stream that is flowing past the periphery of the rotating cylinder at said second position, said air stream being characterized by:

(a) a velocity at said second position that is sufficient to maintain a substantially uniform dispersion of the fibers in the air stream;

(b) being substantially tangential to the periphery of said cylinder at said second position; and

(c) being concurrent with the direction of rotation of said cylinder at said second position;

(5) carrying the dispersed fibers in said air stream under tension until the fibers contact moving foraminous condensing means; and

(6) allowing the air to pass through said condensing means while collecting the fibers on said condensing means in the form of a web of fibers, said web being characterized by excellent uniformity.

4,475,272

SLIVER FORMING CONDENSER

Dennis E. Wood, Simpsonville, S.C., assignor to Rando Machine Company, Macedon, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,334
Int. Cl.³ D01G *15/46*
U.S. Cl. 19—106 R **13 Claims**

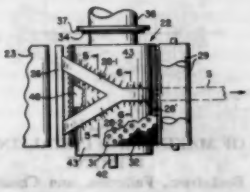
1. Apparatus for forming and manipulating a fiber web into one or more slivers, comprising

a perforated screen mounted to move in an endless path adjacent a fiber supply,

a first plenum having therein an elongate, low suction slot extending transversely of said screen at the side thereof opposite said fiber supply,

means for connecting said first plenum to a low vacuum source, whereby the suction created thereby in said low suction slot causes fibers from said source to be deposited on said screen in the form of a nonwoven web conveyed by said screen away from said source,

a cover overlying said screen to register with said low suction slot, and having thereon at least one projection extending in the direction of movement of said screen, and gradually tapering to a width approximately equal to the desired width of a sliver,



a second plenum having therein at least one high suction slot opening beneath said projection at the same side of said screen as said low suction slot, and

means for connecting said second plenum to a high vacuum source, whereby as the web is advanced beneath said projection the air entering said high suction slot from beneath the tapering side edges of said cover projection causes the fibers of said web to be shifted inwardly toward each other to form a sliver beneath said projection.

4,475,273

BUTTON

Shigeru Konno, Tokyo, Japan, assignor to Scovill Japan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 323,133, Nov. 19, 1981, abandoned. This application Sep. 6, 1983, Ser. No. 529,657
Claims priority, application Japan, Nov. 27, 1980, 55-168814[U]
Int. Cl.³ A44B *1/38*
U.S. Cl. 24—108 **1 Claim**

1. A swivel-head button adapted to be attached to a garment or the like to be retained in a buttonhole, said swivel-head button comprising:

a button head consisting of a front piece which forms an ornamental outer surface and a back piece which has a peripheral part joined to the periphery of the front piece and a middle part defining a thin frustoconical, downwardly narrowing wall of substantially uniform thickness which projects downwardly from the peripheral part to define a stud member receiving space, said wall defining at its lower end a central through hole the surface of said through hole being frustoconical widening downwardly to provide a resiliently expandable smooth guiding surface;

a stud member having a rounded top in said stud member

receiving space, said top having a transverse diameter larger than that of said through hole, said wall permitting said top to pass upwardly through said through hole into said space as a result of the resilient flexibility provided by the thin frustoconical wall structure of said middle part to effect a connection of the botton head to the stud member and be elastically separated from said stud member receiving space when the button head is pulled away from the stud member by a force above about 10 KG.; and

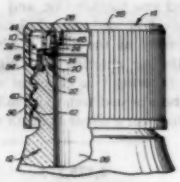
means associated with said stud member for attaching said stud member to a garment or the like.

4,475,274

METHOD OF MAKING AND INSTALLING A POURING FITMENT

Ronald D. Beckstrom, Fullerton, and Chester C. Anderson, Santa Ana, both of Calif., assignors to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed Jul. 7, 1982, Ser. No. 396,024
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—450 **19 Claims**



1. A method of making and installing a pouring fitment comprising:

forming a generally annular fitment having a retainer portion and a lip;

forcing said fitment into a closure and thereby deforming said lip to form a pouring surface thereon, part of said deformation being elastic and part of said deformation being inelastic, whereby said lip defines a pouring surface of a desired three-dimensional configuration when separated from said closure; and

releasably securing said closure to a container and thereby permanently installing said fitment on said container.

4,475,275

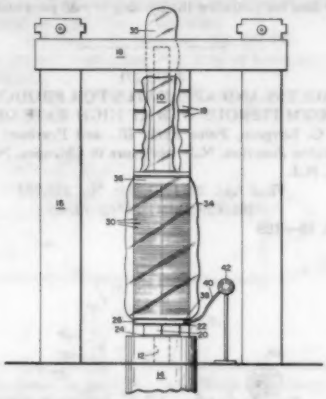
METHOD OF PRODUCING A FILLED CALENDER ROLL

William H. Edwards, Main St., Warner, N.H. 03278

Filed Mar. 23, 1983, Ser. No. 477,906
Int. Cl.³ B21B *13/02*
U.S. Cl. 29—110 **4 Claims**

1. A method for producing a filled roll consisting of a load carrying shaft portion with a cover portion comprised of a stack of oversized annular fillings sleeved upon the shaft portion and including the steps of:

subjecting the stack of fillings fitted on the shaft to a strong compression in the axial direction of the roll while the shaft and stack are enclosed within a sealed area by means of sleeving, evacuating the air from within the enclosed



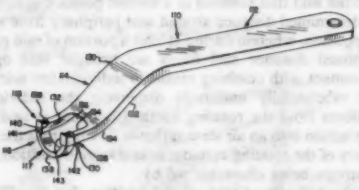
area for allowing the fillings to stretch toward the shaft and to fill the cavity therebetween.

4,475,276

SNAP RING REMOVAL TOOL

Harold D. Staten, Medford, Oreg., assignor to Helen Donaldson, Medford, Oreg.

Division of Ser. No. 330,269, Dec. 14, 1981, Pat. No. 4,416,045, which is a continuation of Ser. No. 116,869, Jan. 30, 1980, abandoned. This application Oct. 21, 1983, Ser. No. 544,441
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—229 **5 Claims**



1. A pry bar-type snap ring removal tool comprising:

an elongated unitary hand tool member having a handle portion and a head portion at opposite ends thereof;

two parallel prongs at the end of the head portion, spaced apart for receiving a shaft therebetween in an orientation generally lengthwise of said member by movement of the tool longitudinally of said shaft;

a crotch interconnecting the proximal ends of the prongs to define a pivoting surfaces for pivoting the tool on a surface of a shaft positioned between the prongs;

ring-engaging means near the distal ends of the prongs and on one side thereof for engaging a split snap ring at two points, one on each lateral side of the split in the snap ring, as the ring-engaging means is urged toward the shaft by movement of the distal ends of the prongs on a direction toward the snap ring; and

a generally U-shaped member interconnecting the distal ends of said prongs and depending therefrom on a side opposite the ring-engaging means for guiding the head portion axially along the shaft and retaining the head portion on the shaft;

the U-shaped member being sized so that the head can be pivoted on the shaft so that a snap ring can be removed from an annular snap ring groove in the shaft by position-

ing the tool generally lengthwise on the shaft with the split in the snap ring facing the ring-engaging means and pivoting the handle portion toward the axis of the shaft.

4,475,277

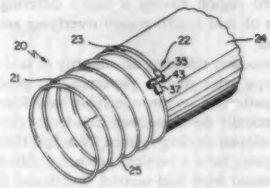
METHOD OF MAKING HOSE CONSTRUCTION

Frank A. Vitellaro, Trenton, N.J., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 188,205, Sep. 18, 1980, Pat. No. 4,378,125. This application Jan. 17, 1983, Ser. No. 458,386

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—434 **4 Claims**



1. In a method of making a hose construction having an integral hose clamp assembly and comprising the steps of providing a hose having a hose end and providing said hose clamp assembly which is attached to opposite sides of a first arcuate length of said hose end with a second arcuate length of said hose end defining the remaining 360° circumference thereof, said assembly once attached to said hose end being movable between an unclamped and a clamped position thereof and in said clamped position employs said second arcuate length of said hose end as clamping means, the improvement in said method comprising the steps of providing a first member, attaching said first member to said hose end at one of said opposite sides of said first arcuate length, providing a substantially L-shaped member having a pair of legs extending transverse each other, attaching one of said legs to said hose end at the other of said opposite sides of said first arcuate length, defining a connecting link pivotally fastening one end portion of said connecting link to said first member with a first fastener, pivotally fastening a central portion of said connecting link to said L-shaped member with a second fastener, and forming cooperating locking means in said L-shaped member and connecting link for locking same and hence said assembly in said clamped position; said steps of pivotally fastening with said first and second fasteners causing said assembly in unclamped position to dispose said connecting link substantially in alignment with said one of said legs along a rectilinear path, and causing said assembly in a clamped position to dispose said connecting link perpendicular to said rectilinear path and substantially parallel to the other of said pair of legs of said L-shaped member.

4,475,278

METHOD OF ASSEMBLING A MECHANICAL PRESS HAVING A DROP IN DRIVE ASSEMBLY

Robert L. Schockman, St. Henry; Vernon E. Busse, Minster; Terry L. Wissman, New Bremen, and Daniel A. Schoch, Minster, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Division of Ser. No. 299,828, Sep. 8, 1981, Pat. No. 4,397,232. This application Feb. 7, 1983, Ser. No. 464,643

Int. Cl.³ B23P *11/00*

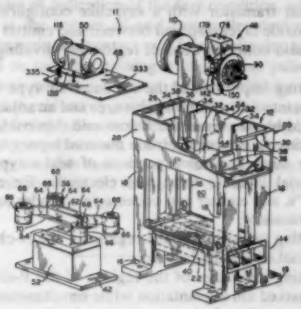
U.S. Cl. 29—434 **8 Claims**

1. In a mechanical press having a rigid frame comprising a bed, a crown, a slide, and at least one upright rigidly interconnecting the bed and crown, a drive assembly including a crankshaft, and at least one connection arm assembly connected to the crankshaft, the method of assembling the drive assembly and slide to the frame comprising:

providing a crank chamber in the crown having four sides and a bottom, the top of the chamber being open in the upward direction, and the crown including at least two support surfaces in the crank chamber and at least one opening in the bottom of the crank chamber,

connecting the connection arm assembly to the crankshaft,

with the uprights fixed to the bed and with the crown fixed to and supported on the uprights, subsequently lowering the interconnected crankshaft and the connection arm



assembly into the crank chamber through the open top thereof while guiding the connection arm assembly through the opening in the bottom of the crank chamber until the interconnected crankshaft and connection arm assembly rests on the support surfaces and one end of the connection arm assembly protrudes through the opening in the bottom of the crank chamber,

and then fastening the crankshaft to the crown, positioning the slide between the bed and crown, and connecting the slide to the end of the connection arm assembly protruding through the opening.

4,475,279

METHOD OF MAKING A MONOLITHIC INTEGRATED CIRCUIT COMPRISING AT LEAST ONE PAIR OF COMPLEMENTARY FIELD-EFFECT TRANSISTORS AND AT LEAST ONE BIPOLAR TRANSISTOR

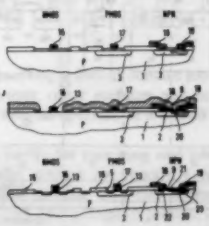
Hans-Juergen Gahle, Emmendingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 16, 1982, Ser. No. 442,053

Claims priority, application European Pat. Off., Nov. 28, 1981, 81109995.1

Int. Cl.³ H01L *21/22, 21/263*

U.S. Cl. 29—577 C **8 Claims**



1. A method for the monolithic integration of a semiconductor circuit having at least one pair of complementary field effect transistors (FET's) having gate electrodes of an n-type material and at least one NPN bipolar transistor comprising the steps of:

forming a first substrate region for said bipolar transistor and a second substrate region for a P-channel FET in one surface of a p-type semiconductor substrate;

providing a thick oxide layer on said surface having an opening formed in the areas of said first substrate regions a second opening formed in the area of said second substrate region and a third opening formed in the area of an N-channel FET;

closing said opening and said first and second openings with thin oxide layers during a gate oxidation process;

exposing said surface in said opening to form an emitter region area and a collector contact region area of said bipolar transistor with a stripelike configuration of said thin oxide layer disposed between said emitter region area and said collector contact region and dividing said opening;

implanting impurities of the conductivity type of said substrate into said emitter region area and an adjacent portion of said bipolar transistor below said thin oxide layer;

depositing an n-type electrode material layer;

etching away unwanted portions of said n-type electrode material layer to form gate electrodes for said pair of FET's, and emitter and collector electrodes for said bipolar transistor;

implanting impurities of the regions of the N-channel FET by masked ion implantation;

implanting impurities of the regions of the P-channel FET by masked ion implantation while simultaneously implanting impurities of a base contact region between said emitter and collector electrodes; and

subjecting said substrate to a high temperature to activate said implanted impurities of said P and N channel FET's and to diffuse impurities in said emitter region area from said emitter electrode and to diffuse impurities in said collector contact region area from said collector electrode.

4,475,280

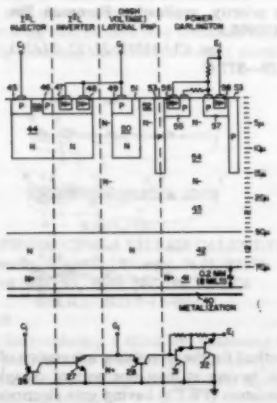
METHOD OF MAKING AN INTEGRATED CIRCUIT INCORPORATING LOW VOLTAGE AND HIGH VOLTAGE SEMICONDUCTOR DEVICES

Louis J. Ragonese; Nicholas A. Schmitz, both of Liverpool; Saverio F. Bevacqua, Fulton, and King Owyang, Baldwinsville, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 219,824, Dec. 24, 1980, Pat. No. 4,412,142. This application Dec. 17, 1982, Ser. No. 450,687

Int. Cl.³ H01L *21/80*

U.S. Cl. 29—577 C **12 Claims**



1. A method for making an integrated circuit of the type including low voltage and high voltage semiconductor devices on a single substrate comprising:

A. providing a substrate having an underlying highly doped first region of a first conductivity type, with a second moderately doped region of said first conductivity type overlying said first region;

B. increasing the doping level with device patterning from the upper surface of said substrate within said second region to form a third, patterned region;

C. simultaneously diffusing an impurity of a second conductivity type with device patterning into said second and third patterned regions to produce a fourth, device patterned region, the portions of said fourth region overlying said third region having a depth differing from those portions of said fourth region overlying said second region; and

D. simultaneously diffusing an impurity of said first conductivity type with device patterning to produce a fifth, device patterned region overlying said fourth region to form vertically developed semiconductor devices wherein said developed devices formed from said third, fourth and fifth regions have a vertical geometry differing from devices formed from said second, fourth and fifth regions.

4,475,281

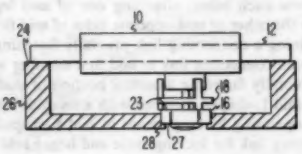
TRANSDUCER HEAD POSITIONING ADAPTER FOR FIXED HEAD FLEXIBLE DISK DRIVES

Joseph J. Holecek, Kasson, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,112

Int. Cl.³ H01F *27/06*; G11B *5/48*

U.S. Cl. 29—603 **2 Claims**



1. The method of assembling a transducer head assembly to a carriage having a projecting boss using an adapter having a first surface radially confining and axially movable with respect to said carriage boss and a second, radial end surface and a fixture having a positioning surface and alignment surfaces for respectively engaging said carriage and said transducer head assembly in a predetermined dimensional relation to one another comprising

placing said carriage and said transducer head assembly in said fixture with said transducer head assembly positioned by said alignment surfaces and said carriage positioned by said positioning surface;

installing said adapter in said fixture with said first surface confining said boss and said second surface abutting said transducer head assembly; and

bonding said adapter to said carriage boss and said transducer head assembly while said carriage and said transducer head assembly are positioned by said fixture, whereby the transducer head assembly is positioned by said fixture with respect to said carriage to eliminate cumulative tolerances or dimensional variations between said carriage and said transducer head assembly.

4,475,282

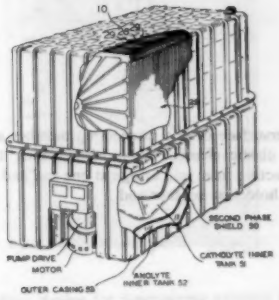
METHOD OF CONSTRUCTING AN IMPROVED ELECTROCHEMICAL CELL

Patrick G. Grimes, Westfield, and Harry Einstein, Springfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 373,392, Apr. 30, 1982, Pat. No. 4,400,448, which is a continuation of Ser. No. 268,666, Jun. 1, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 475,169

Int. Cl.³ H01M 2/00

U.S. Cl. 29—623.1 24 Claims



1. A method of constructing a leak and impact resistant zinc-bromine electrochemical cell, comprising the steps of:

(a) storing a bromine-rich phase in a first inner compartment;

(b) substantially surrounding said first inner compartment with a second compartment containing a first electrolyte for circulation through said cell; and

(c) substantially surrounding both said second and first compartments with a third compartment containing a second electrolyte for circulation through said cell.

4,475,283

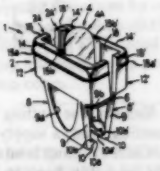
COMBINATION FUSE PULLER AND FUSE CONDITION INDICATOR

Harry W. Olson, Woodridge, and John M. Borzoni, Des Plaines, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Apr. 1, 1982, Ser. No. 364,417

Int. Cl.³ B25B 27/14; H01R 43/00

U.S. Cl. 29—720 20 Claims



1. A fuse puller device to be inserted over and behind the head portion of a fuse housing, which head portion overhangs a lower housing portion from which depend spaced confronting terminals configured for insertion into pressure clip terminals in a mounting block or the like, said housing head portion having exposed at the top thereof a pair of fuse continuity test terminals, said fuse puller device comprising a pair of spaced confronting body portions having confronting lower fuse housing-gripping jaw section means terminating at the bottom ends thereof in horizontally inwardly facing lips for underlying said fuse housing head portion so that an upward pulling force applied to the fuse puller will remove the fuse from said pressure clip terminals, said lower jaw sections respectively joining upper confronting finger-squeezable sections of said body portions of the-fuse puller device, the confronting jaw section means and finger squeezable sections being pivotally supported by resilient pivot-forming means extending between the vertical side margins of said body portions for pivotally supporting said jaw section means and resiliently biasing them toward each other and for allowing a separation movement therebetween when said finger squeezable sections are squeezed, said body portions defining therebetween a fuse continuity indicator-receiving cavity opening onto the top of said fuse puller device and configured for accepting a continuity indicator unit which provides an indication of the fuse condition, said cavity being open at the bottom of said fuse puller device so that indicator terminals can contact said fuse continuity test terminals exposed on said fuse housing when the fuse puller device is applied over said fuse housing, and a continuity indicator unit mounted in said cavity, said indicator unit having a pair of downwardly facing indicator terminal means for engaging said fuse continuity test terminals, said indicator unit having means for providing a visible indication of fuse continuity between said test terminals when the fuse puller device is applied over the head portion of the fuse.

4,475,284

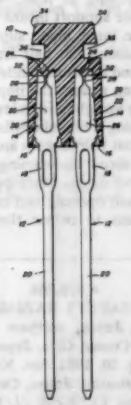
CONTACT PIN ASSEMBLY TOOL

Lennart B. Johnson, Milford, N.H., assignor to Teradyne, Inc., Boston, Mass.

Filed Jun. 3, 1982, Ser. No. 384,188

Int. Cl.³ H05K 3/30; H01R 43/00

U.S. Cl. 29—739 6 Claims



1. A tool for inserting a forked contact having prongs with upwardly converging outer surfaces and inwardly directed contact surfaces into an aperture in a circuit board, said tool comprising

a body with a cavity for receiving said prongs, said cavity being partially defined by upwardly converging inner surfaces shaped to mate with said upwardly converging outer surfaces of said prongs to prevent said prongs from bending outwardly from each other and being damaged during insertion of said contact into a circuit board,

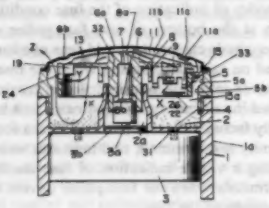
said cavity also being defined by insertion force bearing surfaces for transmitting insertion forces to upper portions of said prongs,

said cavity being open between said prongs below said contact surfaces.

4,475,285
ELECTRIC SHAVER HAVING IMPROVED HAIR DISPOSAL SYSTEM

Hikoyoshi Hara; Hirozo Imai, and Youji Iguchi, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Nov. 10, 1981, Ser. No. 319,990
Claims priority, application Japan, Nov. 29, 1980, 55-168704
Int. Cl.³ B26B *19/44*
U.S. Cl. 30—41.6 23 Claims



1. In a cutting unit adapted to be attached to an electric shaver, the cutting unit comprising an outer blade having a plurality of hair-receiving apertures therethrough; inner blade support means including inner blade means positioned against the inside surface of the outer blade for shearing hair at the edges of the hair-receiving apertures during movement of the inner blade means along the inside of the outer blade means, the inner blade support means being beneath the outer blade for positioning the inner blade means against the outer blade and for moving the inner blade means along the inside of the outer blade under movement by a motor in the shaver; and opening means comprising at least one opening extending through the inner blade support means for passing an air current generated by the inner blade support means during its movement and for passing cut hair from between the inner blade support means and the outer blade to a velocity reducing zone below the opening means, the improvement comprising:

rib means extending upright and at least partially about each opening for forming a chamber-like structure about each opening to hold cut hair therein and to create a region of high pressure air above the opening during rotation of the inner blade support means whereby the high pressure air blows through each opening and carries hair from above the opening means to below the inner blade support means.

4,475,286
SAFETY RAZOR

Tatsuya Saito, Seki, Japan, assignor to Kabushiki Kaisha Kaijirushi Hamono Center, Gifu, Japan

Filed Aug. 20, 1981, Ser. No. 294,807
Claims priority, application Japan, Oct. 20, 1980, 55-145745
Int. Cl.³ B26B *21/14*
U.S. Cl. 30—87 1 Claim

1. A safety razor comprising:

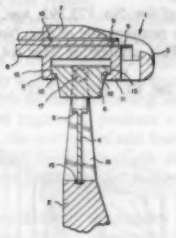
a holder;

a head pivotably coupled to said holder, said head comprising:

a connecting member pivotably coupled to said holder and having a pair of parallel outwardly facing projections extending along the length of said connecting member; and

a blade assembly slidably coupled to said connecting member by a pair of inwardly-facing parallel channels which slidably engage with said outwardly facing projections; and

a return member interposed between the holder and the head, which elastically returns the pivotal head to an original position and said returning member having a first elastic element which can be bent in a direction of a longitudinal axial line of the holder, and a second elastic element which can be bent in a direction perpendicular to said longitudinal axial line of the holder, said first elastic element comprising a bridge formed on an



undersurface of said connecting member and said second elastic element comprising a long tongue plate projecting from said bridge at one end and anchored to said holder at another end.

4,475,287
FILAMENT LINE RETAINING MEMBER

Randall A. Beihoffer, Bloomington, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Jul. 1, 1982, Ser. No. 394,232
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 3 Claims

1. An improved filament line cutting device of the type having a rotatable cutting head, a supply of flexible filament cutting line contained in the cutting head with the cutting line extending outwardly from the head in a free end portion through an exit aperture contained in the head, and means for indexing the cutting line outwardly from the supply thereof through the exit aperture to replenish the free end portion of the cutting line, the indexing means being operable while the head is rotating; and wherein the improvement comprises:

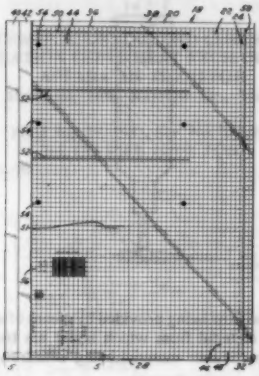
crimped tube inside the cutting head through which the line extends, wherein the crimp in the tube is sufficiently large relative to the cutting line to create a frictional retaining force on the cutting line within the cutting head which frictional force is sufficiently large to prevent the line from retracting through the exit aperture into the cutting head should the line break off at the aperture but is sufficiently small to allow a line indexing operation to occur.

4,475,288

REGISTRY DEVICE AND METHOD FOR USING SAME

Leonard A. Pellegrom, Mt. Clemens, Mich., assignor to Easalign, Ltd., Mt. Clemens, Mich.

Filed Aug. 30, 1982, Ser. No. 412,537
Int. Cl.³ G01B 5/00
U.S. Cl. 33—1 B 7 Claims



1. A registry device for determining printing position on a press sheet comprising, in combination:

a relatively rigid base member of a size to underly and support the press sheet and having top and side edges;

a flexible and transparent cover sheet of a size and shape approximating that of the base member and having top and side edges and attached to the base member adjacent an edge thereof;

a spacer strip providing a straight edge disposed between the cover sheet and base adjacent a side edge thereof, said spacer having a thickness to space apart the base and cover sheet a distance approximately the thickness of the press sheet so that a pressman may readily place the press sheet therebetween with an edge of the press sheet against said straight edge or readily remove a press sheet from between the base and cover sheet;

said cover sheet having a grid pattern thereon of uniformly spaced lines with some extending parallel to said straight edge and others extending perpendicular thereto with the intervals between the lines being related to conventional ruler scale measure, ruler scale indicia on the cover sheet coincident with said grid pattern including a centering line parallel to said straight edge and spaced therefrom by one-half the width of a press sheet, and fold indicating lines on the cover sheet perpendicular to said straight edge and spaced from the top edge by distances trifurcating the length of a press sheet aligned with said straight and top edges.

4,475,289

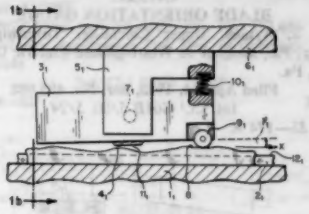
ERROR CORRECTION SYSTEM FOR POSITION MEASURING DEVICE

Guenther Nelle, Bergen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Mar. 18, 1983, Ser. No. 476,529
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210962
Int. Cl.³ G01B 11/04
U.S. Cl. 33—125 C 7 Claims

1. In a position measuring device for measuring the relative position between first and second objects, of the type comprising a measuring scale coupled to move with the first object and a scanning unit coupled to move with the second object to scan the scale, wherein the measuring scale defines a measuring division plane and wherein the scanning unit comprises at least one scanning element, the improvement comprising:

means for mounting the measuring scale and at least a portion of the scanning unit to accommodate a tilt angle between the at least a portion of the scanning unit and the measuring division plane, said at least a portion of the scanning unit comprising the scanning element; and



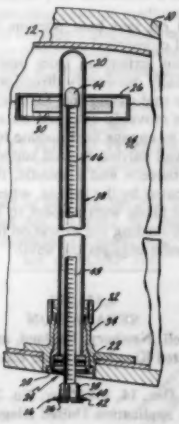
means for controlling the tilt angle between the at least a portion of the scanning unit and the scale to vary the angular orientation of the scanning element with respect to the measuring division plane in correspondence with a desired error correction course in order to bring about a desired error correction of the position of the scanning element with respect to the scale.

4,475,290

FLEXIBLE TANK GAUGE

Eugene F. Colditz, Huntington Beach, Calif., assignor to Kaiser Aerospace & Electronics Corporation, Oakland, Calif.

Continuation of Ser. No. 126,429, Mar. 3, 1980,. This application Nov. 3, 1981, Ser. No. 317,834
Claims priority, application United Kingdom, Jun. 1, 1979, 7919122
Int. Cl.³ G01F 23/12
U.S. Cl. 33—126.7 R 6 Claims



1. A stick for a liquid level gauge adapted to be wholly contained within a tank, said stick always being free to be in stressful contact with bodies outside the tank when said stick is at least partially exposed outside the tank, said stick carrying magnetic means for co-operatively engaging magnetic floating means for positioning said stick to represent fluid level, said stick comprising:

an elongated, flexible plastic slat-like member of substantially elongated cross section having measuring indicia on

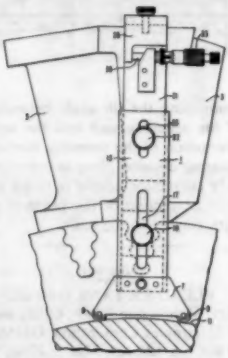
at least one face thereof, said member being sufficiently rigid to resist coiling and be self-supporting vertically without bending when supported from a lower end, said stick during normal measurement being able to flex upon stressful contact with bodies outside the tank instead of breaking or otherwise causing damage.

4,475,291

BLADE ORIENTATION GAUGE

William J. Aymen, Upper Chichester Township, Delware County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 14, 1983, Ser. No. 485,088
Int. Cl.³ G01B *5/00, 5/24*
U.S. Cl. 33—174 R **7 Claims**



1. A gauge for determining orientation of a turbine blade having a root and shroud portion, the turbine blade being disposed on a turbine rotor which has a cylindrical surface thereon, said gauge comprising:

a base portion;

means disposed on said base portion for contacting two points on said cylindrical surface;

a support portion extending from said base portion in a generally radially outwardly direction when said contact means engage said cylindrical surface;

an anvil portion movably disposed on said support portion and disposed to engage said turbine blade; and

a micrometer head carried by said support and having indicia disposed thereon and a spindle, the axial position of which is indicated by the indicia, whereby the orientation of the turbine blade with respect to a radial line can be determined by reading the indicia on the micrometer head when the spindle engages the anvil.

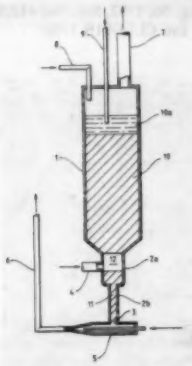
4,475,292

SEPARATION

Claude L. Stockwell, Newbury, England, assignor to Secretary of State for United Kingdom Atomic Energy Authority, London, England

Filed Dec. 14, 1981, Ser. No. 330,697
Claims priority, application United Kingdom, Dec. 19, 1980, 8040711
Int. Cl.³ F26B *3/16, 17/14*
U.S. Cl. 34—10 **15 Claims**

1. A process for the removal of a liquid from a particulate material having associated liquid which comprises forming a bed containing particulate material and associated liquid, passing gas upwardly via an inlet through the bed to take up liquid from the bed into the gas, removing gas and liquid taken up in the gas from the bed, withdrawing particulate material, from which liquid has been removed, from the bed via an outlet, below said gas inlet providing resistance to gas flow through the outlet so as to encourage gas to pass through the bed rather than through the outlet and transporting particulate material immediately after leaving the outlet by means of gas, said



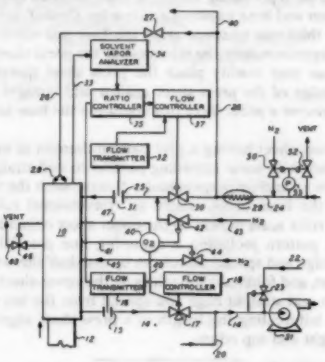
resistance to gas flow being provided by means of a packed bed of particulate material from which liquid has been removed prior to said particulate material being withdrawn from said outlet.

4,475,293

CONTROLLED INERTING OF CHAMBER ATMOSPHERES

Ratan Banerjee, North Brunswick, N.J., assignor to The BOC Group, Inc., Montvale, N.J.

Filed Apr. 28, 1982, Ser. No. 372,600
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—27 **17 Claims**



1. A method of maintaining a material balance with respect to gas flows into and out of a curing oven during the recovery of solvent vapor from the curing oven atmosphere which is comprised substantially of solvent vapor, inert gas and minor quantities of oxygen comprising the steps of withdrawing said oven atmosphere and passing the same to a condensation unit wherein said solvent vapor is condensed and from which said inert gas and minor quantities of oxygen are returned to said oven; the improvement comprising

withdrawing said oven atmosphere at a substantially constant flow rate from said oven;

sensing the solvent vapor concentration of said oven atmosphere; and

varying the flow rate at which said inert gas and minor quantities of oxygen are returned to said oven in response

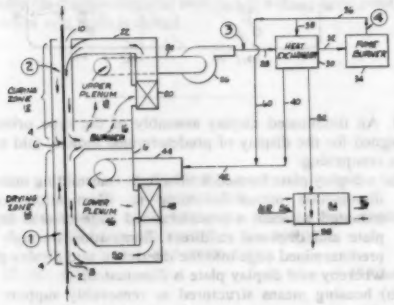
to sensed changes in said oven solvent vapor concentration such that a material balance is maintained with respect to (i) solvent vapor formed in said oven and said inert gas and minor quantities of oxygen returned to said oven versus (ii) said oven atmosphere withdrawn from said oven.

4,475,294

PROCESS FOR DRYING AND CURING WIRE INSULATION USING HEAT EXCHANGE AND APPARATUS THEREFOR

Charles G. Henricks, 1636 Bayview Dr., Muskegon, Mich. 49441

Filed Jul. 27, 1981, Ser. No. 286,729
Int. Cl.³ F26B *13/02, 23/00*
U.S. Cl. 34—79 **9 Claims**



1. A process for drying and curing the insulation on a wire which comprises:

(a) having a drying zone and a curing zone through which the wire having the curable insulating material coated thereon passes sequentially;

(b) passing a first gaseous stream containing air and non-combustible gases through said drying zone in contact with said wire, with the temperature of said stream being such as to effect drying but not curing of the curable insulating material, said stream also simultaneously accumulating therein combustible volatile gases which are evolved from said curable insulating material during said drying;

(c) passing said first stream containing air, non-combustible gases and combustible gases through a first burner wherein said stream is heated to a temperature above the curing temperature of the curable insulating material;

(d) dividing said first stream into a second gaseous stream and a third gaseous stream;

(e) passing said second stream through said curing zone in contact with said wire, with said second stream effecting the cure of said curable insulating material, and then returning said second stream to said first burner;

(f) passing said third stream through the cold side of a high temperature heat exchanger wherein sensible heat is transferred to said third stream from a fourth gaseous stream having a higher temperature;

(g) passing said heated third stream to a second burner wherein said combustible gases are burned in the presence of air to form additional non-combustible gases, with the exhaust of said second burner being said fourth stream containing air and non-combustible gases and being further heated by the evolved heat of combustion during said burning, which fourth stream is then passed through the hot side of said high temperature heat exchanger to transfer sensible heat to said third stream; and

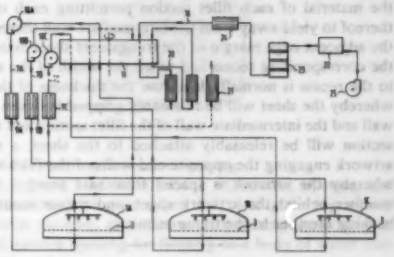
(h) thereafter passing said fourth stream to said drying zone and mixing it with air to form said first stream.

4,475,295

INSTALLATION FOR THE DEHUMIDIFICATION OF A GASEOUS DRYING MEDIUM USING AN ADSORBENT AND WITH REGENERATION OF THE ADSORBENT

Peter Hussmann, Florence, Italy, assignor to Mittex Aktiengesellschaft, Vaduz, Liechtenstein

PCT No. PCT/EP81/00129, § 371 Date Apr. 19, 1982, § 102(e) Date Apr. 19, 1982, PCT Pub. No. WO82/00596, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 20, 1981, Ser. No. 373,486
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031446
Int. Cl.³ F26B *21/08*
U.S. Cl. 34—80 **33 Claims**



1. A device for the dehumidification of a gaseous drying medium, which comprises (1) means for providing a stream of gaseous drying medium comprising a plurality of separate partial streams of differing moisture content and (2) common drying means for receiving all of said partial streams, said common drying means comprising

(a) a plurality of chambers, each containing an amount of adsorbent material; and

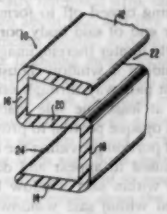
(b) means for successively providing to one or more chambers of said plurality of chambers a stream of adsorbent material-regenerating gaseous medium, such that each of said plurality of chambers first receives each of said partial streams in order of increasing moisture content and thereafter receives said stream of adsorbent material-regenerating gaseous medium.

4,475,296

FILLET FOR PICTURE FRAME

Gregory E. Fremstad, 777 San Carrizo Way, Mountain View, Calif. 94043

Continuation-in-part of Ser. No. 189,382, Sep. 22, 1980,. This application Jan. 13, 1983, Ser. No. 457,797
Claims priority, application Canada, Apr. 13, 1981, 375310
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152 **3 Claims**



1. A frame for artwork comprising: a number of frame members, the ends of the frame members being interconnected together to form an opening for viewing the artwork, each frame member having an overhang near the opening; a resilient

fillet section for at least certain of said frame members, respectively, each fillet secton being transversely S-shaped and having a pair of spaced end walls and an intermediate wall to present a pair of recesses between the end walls and on opposite sides of the intermediate wall, each recess having an open side entrance the end walls being inclined toward the intermediate wall and the width of the side entrance of one recess being less than that of the other recess, one end wall of each fillet section being in engagement with the overhang of the respective frame member with the open side entrance of one of the recesses of each fillet section being adjacent to the opening in the frame; a transparent sheet across the opening, the outer peripheral edge margins of the sheet being removably received in the adjacent recesses of the fillet sections, the resilience of the material of each fillet section permitting each end wall thereof to yield away from the intermediate wall thereof when the adjacent edge margin of the transparent sheet extends into the corresponding recess and when the width of the entrance to the recess is normally less than the thickness of the sheet, whereby the sheet will be releasably gripped between the end wall and the intermediate wall of the fillet section and the fillet section will be releasably attached to the sheet; a sheet of artwork engaging the opposite end walls of the fillet sections, whereby the artwork is spaced from said sheet; a backing member behind the artwork sheet; and means securing the backing member to the frame members.

4,475,297

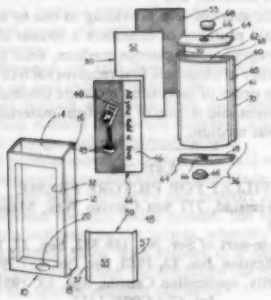
DECORATION FOR A NOVELTY

Victor Lonsmin, 1406 Ogden Ave., LaGrange Park, Ill. 60525

Continuation-in-part of Ser. No. 319,477, Nov. 9, 1981,. This application May 21, 1982, Ser. No. 380,570

Int. Cl.³ G09F *7/00*

U.S. Cl. 40—486 **28 Claims**



1. A novelty sleeve for a conventional, disposable cigarette lighter, comprising a body portion having a hollow interior space sized to receive the cigarette lighter, one end of said body portion being closed off to form a bottom end of said sleeve, the other end of said body portion being open to receive the cigarette lighter therein, image presenting means for said sleeve including a window housing for fitting on and extending at least part way through said sleeve, said window housing having at least one side made of clear material, a filmstrip with an opaque portion to provide a part of an image and a translucent portion providing the remainder of the image which is also caused to appear and disappear, said filmstrip being contained within said window housing, a dark background contained within said window housing and situated behind said translucent portion of the filmstrip, and a light color shield contained within said window housing and located between said filmstrip and said dark background, said shield being movable so as to enable the portion of the image defined by the translucent portion of the filmstrip to be caused to appear when said shield is moved therebehind and to disappear when the shield is moved away.

4,475,298

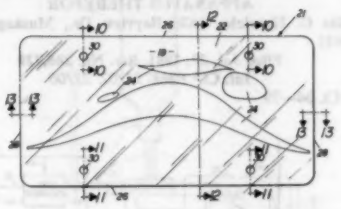
ILLUMINATED DISPLAY ASSEMBLY

Roberto Munoz, 2955 SW. 15 St., Miami, Fla. 33145

Filed Apr. 25, 1983, Ser. No. 488,589

Int. Cl.³ G09F *13/18*

U.S. Cl. 40—546 **9 Claims**



1. An illuminated display assembly of the type primarily designed for the display of predetermined indicia, said structure comprising:

(a) a display plate formed from a light transmitting material, illumination means including an illumination source mounted adjacent a predetermined edge of said display plate and disposed to direct illumination through said predetermined edge into the interior of said display plate, whereby said display plate is illuminated;

(b) housing means structured to removably support said illumination source therein, shield means being opaque and disposed between said display plate and an outer disposed and viewable surface of said display assembly, said shield means including non-opaque portions configured to define predetermined indicia and disposed to allow illumination from said illuminated display plate to be directed therethrough;

(c) said illumination means comprising a circuit means disposed in electrical interconnection between said illumination source and a power source; and

(d) said circuit means comprising a base, conductor means formed on said base and disposed and structured to interconnect said illumination source to a power source; said base and said housing means cooperatively structured for removable mounting of said base and said illumination source within said housing means.

4,475,299

JITNEY SIGN

Eugene Nelson, Wynnewood, Pa., assignor to American Mobile Advertising Corp., Bensalem, Pa.

Filed Nov. 3, 1983, Ser. No. 548,336

Int. Cl.³ G09F *21/04*

U.S. Cl. 40—591 **2 Claims**

1. An advertising sign arrangement for a vehicle having at least one rear emergency door comprising:

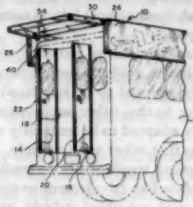
a pair of substantially rectangular lateral signs, each of said lateral signs being mounted on a different side of said vehicle adjacent the top thereof, each of said lateral signs extending slightly rearwardly of said vehicle;

a substantially rectangular rear sign located at the upper rear of said vehicle between said lateral signs, said rear sign having upper side edges;

pivot means pivotally mounting the upper side edges of said rear sign to the upper rearwardmost portions of said lateral signs so that the bottom of said rear sign can pivot rearwardly and upwardly;

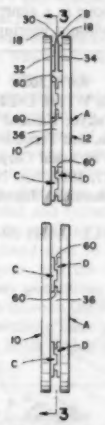
the position of said pivot means being above the top edge of said rear door and the bottom of said rear sign lying below

the top edge of said rear door whereby said rear sign is engaged by said rear door when the same is opened and is pivoted rearwardly and upwardly allowing said door to open freely, and



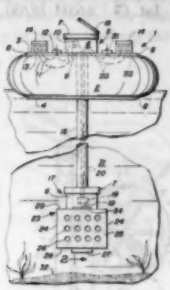
means for maintaining said rear sign in a downward position when said door is closed.

4,475,300
SIGN BOARD
Robert L. Ledenican, 8656 Hilltop Dr., Mentor, Ohio 44060
Filed Feb. 18, 1982, Ser. No. 350,065
Int. Cl.³ G09F *7/04*
U.S. Cl. 40—600 **15 Claims**



1. A sign board comprising: a pair of front and rear panels having top and bottom edges and opposite side edges, a plurality of pockets between said panels, said pockets being elongated between said side edges and being spaced-apart between said top and bottom edges, each said pocket being open along at least one of said side edges for installing a message bearing strip in each said pocket and removing same therefrom, transparent windows in said front panel aligned with said pockets, and, elongated magnet strips bonded to the inner surfaces of said panels along the top and bottom edges of each said pocket for performing the functions of releasably holding said panels together in spaced-apart relationship, spacing said panels from one another in substantially parallel spaced-apart relationship and defining the top and bottom edge portions of said pockets therebetween.

4,475,301
FISH ATTRACTING DEVICE
Charles D. Wortham, Rte. 1, Box 429, Shongaloo, La. 71072
Filed Jul. 12, 1982, Ser. No. 397,433
Int. Cl.³ A01K *75/02, 97/04*
U.S. Cl. 43—17.5 **10 Claims**



1. A fish-attracting device comprising:
(a) an inflated inner-tube having an interior opening and further comprising an upper disk closing the top of said interior opening, and a lower disk closing the bottom of said interior opening for floating on a body of water containing fish;
(b) first light means carried by said inner-tube above the water line for illuminating the surface of the water adjacent said inner-tube;
(c) bait-containing means carried by said inner-tube and submerged in the water below said inner-tube when said fish-attracting device is placed in the body of water; and
(d) second light means cooperating with said bait-containing means to illuminate said bait-containing means when said bait-containing means is submerged in the water.

4,475,302
SPOON LURE
Robert W. Jakeway, P.O. Box 955, Colstrip, Mont. 59323
Filed Sep. 29, 1982, Ser. No. 428,197
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.5 **9 Claims**

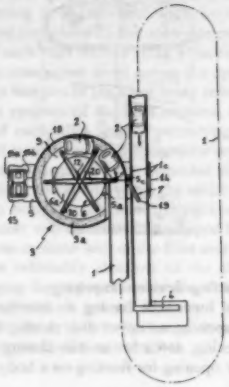
1. A fishing lure including an elongated body member with smooth side edges and tapered ends, said body member being formed from a substantially flat metal strip, said body member having a length between about two and five times the width thereof, line fastening means located adjacent one end of said body member and hook fastening means located adjacent the opposite end of said body member, said body member tapering more severely toward said hook fastening means, said body member having a longitudinal axis with a generally two step configuration, said body member having a transverse bend in one direction extending from said hook fastening means between about one-third and one-half of its length and a transverse bend in an opposite direction along the remainder of its length, each of said transverse bends having a radius of curvature of approximately one-forth the width of said body member, and located only along the central part thereof said body member including a fluorescent surface on one side thereof and a dark surface on the opposite side thereof.

4,475,303

PAD FOR LAUNCHING TOY VEHICLES ONTO A TRACK

Jean-Louis Ribas, Saint-Priest, and Gilbert Chenavier, Caluire, both of France, assignors to Majorette S.A., Caluire, France

Filed Dec. 2, 1982, Ser. No. 446,301
Claims priority, application France, Dec. 11, 1981, 81 23352
Int. Cl.³ A63H *18/00*
U.S. Cl. 446—429 6 Claims



1. Apparatus for successively launching multiple toy vehicles each having a motor previously energized to provide torque to the vehicle drive wheels tending to thrust the vehicle onto a track from a launching pad, comprising:

(a) a track;

(b) a pad comprising a circular plate around which the energized vehicles are placed, the plate having means for fixing a portion of the track to the plate;

(c) a turnstile rotatably mounted at the center of the plate and having multiple outwardly-extending arms respectively separating the vehicles located around the plate, each vehicle thrusting against one of the arms in an effort to rotate the turnstile; and

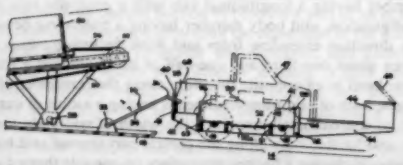
(d) pawl means fixed with respect to the plate and operative in a blocking position to block rotation of the turnstile to oppose the thrust of the vehicles thereagainst, and the pawl means having means overlying the track at a location which is remote from the circular plate and responsive to the passage of a vehicle along the track to move the pawl means to a releasing position in which it unblocks the turnstile to allow passage of one arm past said portion of the track, whereby to permit the vehicle thrusting against that arm to launch onto the track.

4,475,304

TOY VEHICLE APPARATUS FOR WEIGHT PULLING

Adolph E. Goldfarb, 1432 S. East Wind Cir., Westlake Village, Calif. 91361, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.

Filed Feb. 10, 1982, Ser. No. 347,452
Int. Cl.³ A63H *17/00*
U.S. Cl. 446—465 19 Claims



1. Toy apparatus for coupling a self-powered toy pulling vehicle to a toy weighted vehicle for pulling the weighted vehicle along a supporting surface, said coupling apparatus comprising:

a transversely extending upright plate-like tab element adapted to be mounted on one of such vehicles, said tab element being stabilized against lateral rotation relative to that one vehicle; and

a tongue element adapted to be movably mounted on the other of such vehicles, said tongue element:

being particularly adapted to be stabilized against lateral rotation relative to that other such vehicle,

being particularly adapted to be generally vertically movable relative to that other such vehicle,

having an elongated transversely extending slot which receives said plate-like tab element to couple such pulling vehicle to such weighted vehicle, and

being particularly adapted to be firmly but rotatably mounted to that other such vehicle for substantial movement about a transversely extending axis which is generally parallel to said surface;

comprising a first section and a second section; said first section being pivotally mounted at one end in close proximity to such surface and being connected at its other end to the second section; said tongue element being disposed when it is coupled to said tab element such that said first section extends forwardly and upwardly from where it is pivotally mounted, and said second section being disposed in a generally horizontal plane generally parallel to such surface; and

said plate-like tab element extending in a plane which is generally parallel to said axis of said tongue element;

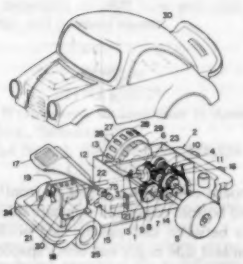
whereby, when such pulling vehicle pulls such weighted vehicle over the surface, such coupled vehicles are maintained in generally straight-line longitudinal alignment and they thereby move in a generally straight line in the forward direction without veering to either side.

4,475,305

TOY VEHICLE WITH INERTIA WHEEL

Hirotarou Kawakami, Tokyo; Kazumi Yamakawa, Funabashi; Hiroshi Yasuda, Tokyo, and Teruhiko Kitaoka, Nagareyama, all of Japan, assignors to Asahi Corporation, Tokyo, Japan

Filed Sep. 17, 1982, Ser. No. 419,578
Claims priority, application Japan, Sep. 18, 1981, 56-138512[U]
Int. Cl.³ A63H *29/20*
U.S. Cl. 446—463 8 Claims



1. A toy wheeled vehicle with an inertia wheel having a body, friction driven wheels supported on ends of a wheel axle, an inertia-type flywheel mounted on an axle, and a driving mechanism being rotatably set in a casing, said vehicle comprising:

a. a main driving mechanism operable to transmit the rotation of the friction driven wheels to the inertia-type flywheel, said main driving mechanism having gear trains including:

a wheel gear mounted on the wheel axle,
a clutch gear means mounted on an axle, engaging with the wheel gear movably thereon,
a floating intermediary gear means mounted on an axle, engaging detachably with the clutch gear means, and
a flywheel gear means mounted on the flywheel axle, engaging detachably with the floating intermediary gear means;

b. a secondary driving mechanism operable to transmit the rotation of the flywheel to the friction driven wheels, said secondary driving mechanism having gear trains including:
a stationary intermediary gear means mounted on an axle, engaging with the flywheel gear means,
said flywheel gear means detached from the floating intermediary gear means,
said clutch gear means detached from the floating intermediary gear means, and
said wheel gear engaging detachably through the clutch gear means and the stationary intermediary gear means with the flywheel gear means;

c. a clutch gear driving means mounted on an end of the clutch gear axle to actuate the clutch gear means between the wheel gear, the floating intermediary gear means and the stationary intermediary gear means;

d. an operating member operable to move the clutch gear driving means; and

e. wherein the clutch gear means has a gear and a pinion which is engaged with the wheel gear, the floating intermediary gear means has a gear and a pinion which is detachably engaged with the gear of the clutch gear means, the flywheel gear means has two pinions and one of said pinions is detachably engaged with the gear of the floating intermediary gear means, the stationary intermediary gear means has respectively a gear which is engaged with the other remaining pinion of the flywheel gear means, and a pinion which is detachably engaged with the gear of the clutch gear means, the clutch gear driving means is slidably supported on at least one side wall of the casing of the driving mechanism, the operating member is provided at an end portion of the clutch gear driving means to move said driving means for engagement of the clutch gear means between the stationary intermediary gear means and the wheel gear, and wherein side walls of the casing are parallel and include an inclined slot and a vertical slot, and the ends of the clutch gear axle are inserted in the inclined slots to move in an arc therein along the wheel gear, and the ends of the axle of the floating intermediary gear means are floatably inserted in the vertical slots to move in the vertical direction therein, and ends of the remaining axles are rotatably mounted in respective bearing holes which are provided in the side walls of the casing.

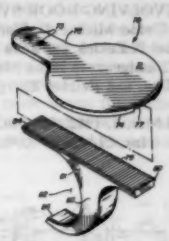
4,475,306

WINDOW SILL FLOWER POT SUPPORT

Douglas W. Mehrens, 742 East Coronado Rd., Phoenix, Ariz. 85006

Filed Nov. 22, 1982, Ser. No. 443,465
Int. Cl.³ A47G *4/00*
U.S. Cl. 47—39 **2 Claims**

1. A support for plants comprising:
a flat load-bearing first portion,
said first portion having tab means extending laterally therefrom,
at least one aperture extending through said tab means for receiving a fastening means for attaching the support to a surface of an object, and
a second portion comprising a leg affixed to said first portion and extending laterally therefrom in the same direction as the ends of said tab means,
the free end of said leg being provided for engaging the object on which the support is mounted forming a leg-bearing means for said support,
said first portion comprising a flat bottom surface with said bottom surface having a groove extending longitudinally thereof toward said tab means, and
said second portion comprising an arm slidably extending longitudinally into said groove for positioning said arm at one of a plurality of positions along the length of said first portion,



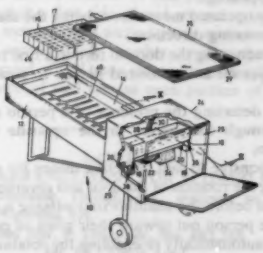
at least a part of the interior of said groove being serrated, and
at least a part of said arm that engages the surface of said groove being serrated,
whereby when said arm is slidably engaged with said groove, the serrated surfaces of said groove and said arm interlock to hold said first and second portions in a given relative position.

4,475,307

APPARATUS FOR DISPENSING A LIQUID

Eric B. Privett, P.O. Box 106, Honeydew 2040, South Africa

Filed Aug. 30, 1982, Ser. No. 412,819
Claims priority, application South Africa, Sep. 3, 1981, 81/6115
Int. Cl.³ A01G *27/00*; B67D *5/08*
U.S. Cl. 47—79 **11 Claims**



1. An apparatus for dispensing liquids to plants, the apparatus comprising: a container for housing the plants; a rigid reservoir for the liquid; a conduit connecting the interior of the container to the interior of the reservoir, the reservoir being pivotable between an operational position in which liquid flows by gravity from the reservoir into the container and an inoperative position in which excess liquid in the container flows by gravity from the container into the reservoir, and in which inoperative position liquid is stored; the reservoir and its liquid contents providing a mass which is so located and mounted about the pivot axis that, in the operational position, it provides a retaining movement which tends to hold the reservoir in the operational position; a further mass which is located and mounted about the pivot axis that it provides a counter-moment acting in the opposite direction to the retain-

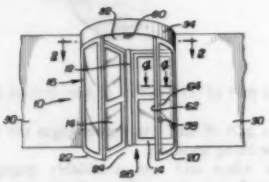
ing moment, the counter-moment being of sufficient magnitude to overcome the retaining moment once a pre-determined quantity of liquid has been dispensed to cause the reservoir to move to the inoperative position; and vent means which vent the air above the liquid in the reservoir so that the pressure in the liquid in the reservoir is maintained substantially at atmospheric pressure.

4,475,308

REVOLVING DOOR SYSTEM

Stanley R. Heise, Blaine; Michael D. Blackston, Brooklyn, both of Minn.; Michael B. Zekich, and John L. B. Parselle, both of Pasadena, Calif., assignors to Heise Manufacturing Co., Inc., Minneapolis, Minn. and Related Energy & Security, Evansville, Ind.

Filed Mar. 1, 1982, Ser. No. 353,165
Int. Cl.³ E05D *15/02*
U.S. Cl. 49—42 **9 Claims**



1. A security door system for permitting passage of persons therethrough in one authorized direction while preventing persons from trying to pass therethrough in the other unauthorized direction, comprising:

a rotatable center shaft defining an upright axis capable of 360 degree rotation;

a plurality of at least 3 wings circumferentially disposed about the shaft rotatable about the axis;

a pair of upright opposing curved panels disposed in facing spaced apart relationship to define a partially enclosed region bounding the wings and defining opposing first and second openings;

electrically operated means for rotating the shaft in first and second rotating directions;

means for actuating the door to turn in a first rotating direction to permit an authorized person to pass through the system;

means for detecting the presence of a person attempting to pass through the system in the opposite unauthorized direction;

means responsive to said detecting means for automatically stopping the rotation of the door and reversing its rotating direction before the unauthorized passage is completed to back the person out toward their point of entry; and

means for automatically re-enabling the rotation of the door in the first rotating direction when the unauthorized person is no longer detected, said stopping, reversing and re-enabling functions being performed by said system without human intervention.

4,475,309

MODULAR PROTECTIVE GRILL

Harvey Porter, Narberth, Pa., assignor to Royal Factories, Incorporated, Philadelphia, Pa.

Filed Jun. 22, 1982, Ser. No. 390,917
Int. Cl.³ E06B *3/68*
U.S. Cl. 49—55 **20 Claims**

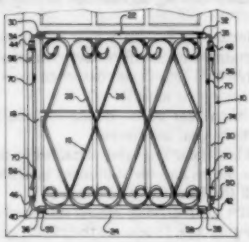
1. A protective grill for overfitting a building opening having a height and a width defined between a left jamb and a right jamb comprising

a central body overfitting a major portion of the building opening, the body being provided with upper and lower tubular means to adjust the width of the grill,

the upper and lower tubular members each having left and right ends;

side attachment bar means secured to each jamb to affix a portion of the central body to the jamb;

horizontal adjustable means in sliding engagement within at least some of the left and right ends and interconnected between the upper and lower tubular means of the central



body and the side attachment bar means to permit horizontal adjustment therebetween;

fasteners engaged in the horizontal adjustable means to secure the horizontal adjustable means to the central body upper and lower tubular means in any one of a plurality of laterally adjusted positions; and

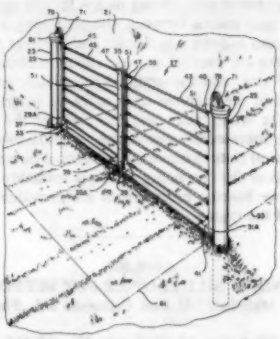
hinge pins means carried by the horizontal adjustable means to pviotally interconnect the lateral ends of the central body respectively to the side attachment bar means.

4,475,310

BUMP GATE

Daniel J. Brewer, 4211 Austin Ave., Brownwood, Tex. 76801

Filed Sep. 7, 1982, Ser. No. 415,401
Int. Cl.³ E06B *11/00*
U.S. Cl. 49—131 **9 Claims**



1. A gate, comprising:

two hollow posts secured in the earth at spaced apart positions,

a movable gate means comprising two spaced apart side members connected transversely to a lower member such that said lower member defines the lower end of said gate means,

means for pivotally coupling the lower end of said gate means on each side thereof to the lower ends of said two posts respectively for pivotal movement about a generally horizontal axis whereby said movable gate means may be moved between an upright closed position and a lower open position,

two weight means located in said two hollow posts respectively whereby said two weight means may be moved upward and downward in said two hollow posts,

two flexible means having first ends connected to said two weight means respectively and having second ends connected to said two side members respectively of said gate means such that said two weight means hang downward in said two hollow posts whereby when force is applied to said movable gate means transversely to and above said axis, the upper end of said movable gate means moves downward causing said two weight means to be pulled upward, and when the force is released from said movable gate means, said two weight means, by way of said two flexible means, move said movable gate means to said closed upright position, and

flexible structural means connected to said two side members,

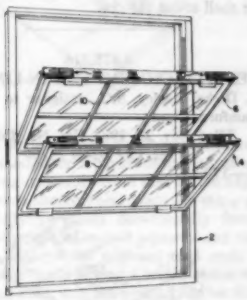
said flexible structural means being located between said two side members and the mid portion of said movable gate means between said two side members.

4,475,311

CUSTODIAL LATCH ASSEMBLY FOR WINDOWS AND THE LIKE

Richard L. Gibson, Blairsville, Pa., assignor to Season-All Industries, Inc., Indiana, Pa.

Filed Sep. 21, 1982, Ser. No. 420,822
Int. Cl.³ E05D *15/22*; E05C *1/04*
U.S. Cl. 49—176 **27 Claims**



1. A window construction comprising

a fixed frame,

a sash frame movable within said fixed frame,

a latch assembly secured to said sash frame,

said latch assembly including a latch housing, a latch member reciprocable within said housing and a cam lock,

said cam lock being rotatably mounted within said housing and having a first position wherein said cam lock urges said latch member to a locked position where the latch tongue projects out of said housing and a second position wherein said latch tongue may be moved to an unlocked position where said latch tongue is at least partially retracted into said housing, and

said cam lock having a cantilevered portion for contacting a rear portion of said latch member when in said first position.

4,475,312

DOOR ASSEMBLY

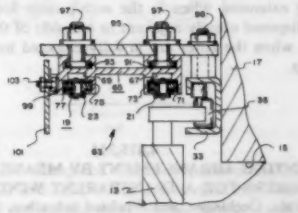
Bruno J. Deutschle, Romanshorn, Switzerland, assignor to F. L. Saino Manufacturing Co., Memphis, Tenn.

Filed Sep. 23, 1983, Ser. No. 535,208
Int. Cl.³ E05F *11/00*
U.S. Cl. 49—360 **8 Claims**

1. In a door assembly of the type including a door member for selectively covering an opening in a wall, an endless chain member having first and second span portions joined by first and second bight portions, coupling means for coupling said chain member to said door member, and drive means for driving said chain member to cause said door member to move between an open and a closed position, the combination of a guide means for guidingly constraining said chain member, said guide means comprising:

(a) elongated body means for receiving said first and second span portions of said chain member, said body means having an elongated first channel for receiving said first span portion of said chain member and having an elongated second channel for receiving said second span portion of said chain member;

(b) elongated first guide means for guiding said first span portion of said chain member within said first channel of said body means, said first guide means including an elongated first guide member positioned within said first channel of said body means for guidingly engaging a first side of said first span portion of said chain member, said first guide means including an elongated second guide member positioned within said first channel of said body means for guidingly engaging a second side of said first span portion of said chain member; and



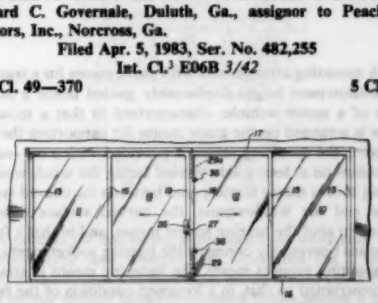
(c) elongated second guide means for guiding said second span portion of said chain member within said second channel of said body means, said second guide means including an elongated first guide member positioned within said second channel of said body means for guidingly engaging a first side of said second span portion of said chain member, said second guide means including an elongated second guide member positioned within said second channel of said body means for guidingly engaging a second side of said second span portion of said chain member.

4,475,313

LOCKING ARRANGEMENT FOR SLIDING DOORS

Bernard C. Governale, Duluth, Ga., assignor to Peachtree Doors, Inc., Norcross, Ga.

Filed Apr. 5, 1983, Ser. No. 482,255
Int. Cl.³ E06B *3/42*
U.S. Cl. 49—370 **5 Claims**



1. A sliding structure comprising at least a pair of opposing horizontally movable door panels engaged with a horizontal trackway, each door panel including a vertical stile, the stile of one door panel having formed therein a vertical groove ex-

tending throughout the height of the door panel and the opposing door panel having formed thereon a vertical tongue adapted to enter said vertical groove when the two door panels are in closed stile-to-stile abutting relationship, said vertical groove and tongue being rigid throughout their lengths whereby interengagement of the groove and tongue significantly reinforces the abutting stiles against bending in the outside to inside direction with reference to the door, top and bottom vertical axis sliding bolts contained in the stile having said vertical groove and being disposed closely adjacent to one side of the groove and tongue when the latter are in fully engaged interfitting relationship, a swinging bolt having a horizontal swing axis on the stile of the door panel having said tongue and being disposed at an elevation between said top and bottom sliding bolts and having a hook-like locking extension extending forwardly of the stile on which said swinging bolt is mounted and being received lockingly through a slot provided in the opposing stile having said groove, and the hook-like locking extension when in the active door locking position being disposed closely adjacent to one side of the groove and tongue when the latter are in fully engaged interfitting relationship.

4,475,314

MOUNTING ARRANGEMENT BY MEANS OF GUIDE MEMBERS FOR A TRANSPARENT WINDOWPANE

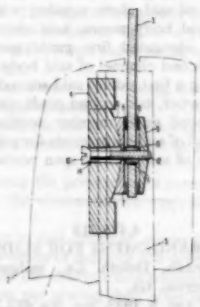
Heinz Faix, Gechingen, and Winfried Schreiber, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,893

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843633

Int. Cl.³ E05F *11/38*

U.S. Cl. 49—374 7 Claims



1. A mounting arrangement with guide means for a transparent windowpane height-displaceably guided inside a hollow space of a motor vehicle, characterized in that a mounting means is arranged on the guide means for supporting the windowpane, the mounting means is provided with a curved surface means on at least a side thereof facing the windowpane, a bearing socket means is interposed between the curved surface means and the windowpane, the curved surface means is adapted to abut the bearing socket means, and in that a fastening means operatively connects the bearing socket means with the mounting support means, the fastening means is arranged and constructed so that, in a loosened condition of the fastening means, the fastening means can be displaced together with the bearing socket means so as to enable an adjustment of the windowpane relative to the mounting means, whereby, upon a tightening of the fastening means, the adjustment of the windowpane relative to the mounting means is fixed.

4,475,315

INDUCTOR FOR MAGNETIC ABRASIVE POLISHING

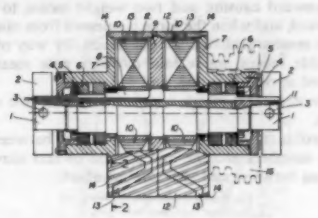
Peter K. Galabov, Boris G. Makedonski, Stefan Jo Kochev, and Maya T. Angelova, all of Sofia, Bulgaria, assignors to Centralen Mashinostroitelen Institute, Sofia, Bulgaria

Filed Feb. 11, 1983, Ser. No. 465,766

Claims priority, application Bulgaria, Feb. 11, 1982, 55331

Int. Cl.³ B24B *5/18*

U.S. Cl. 51—72 R 5 Claims



1. An inductor for centerless grinding by ferromagnetic abrasive particles, comprising an electromagnetic coil, means for supporting the coil and holding it stationary, means for energizing the coil, and a circular cylindrical shell coaxial of and surrounding the electromagnetic coil, said shell being made up of two axially aligned end rings made of ferromagnetic material and a central ring made of non-magnetic material separating said two end rings, and means for rotatably driving the shell about the coil.

4,475,316

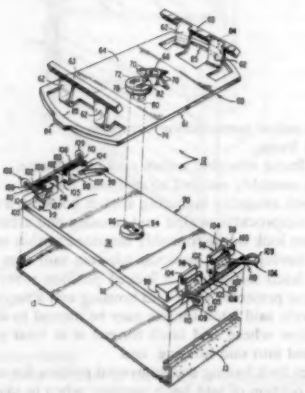
PLATEN ATTACHMENT FOR IN-LINE SANDER

William C. Dicke, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 28, 1983, Ser. No. 555,777

Int. Cl.³ B24B *23/00*

U.S. Cl. 51—170 TL 7 Claims



1. A sanding or polishing device comprising a platen for carrying a strip of sand paper, and a platen support for retaining said platen aligned thereto in an operating position, said platen and platen support including mating surfaces having, one on each, a key carried on the end of a length of supporting pin itself extending from of one of said mating surfaces, and a key slot corresponding to said key through which key may extend beyond said slot when said platen and platen supporting mating surfaces are brought together at any given angle from

said operating position, said platen and platen support further comprising posts extending from either end of one of said mating surfaces, said posts being undercut adjacent their mating surface to receive the platen or platen support associated with the other of said mating surfaces when one is rotated relative to the other, whereby the platen is retained to said platen support by said undercuts and by said key rotated away from alignment with said key slot.

4,475,317

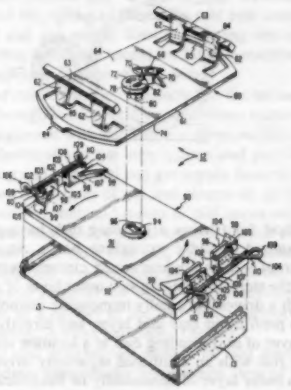
PAPER RETAINER FOR A SANDING DEVICE

William C. Dicke, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 28, 1983, Ser. No. 555,779

Int. Cl.³ B24B *23/00*; B24D *15/00*

U.S. Cl. 51—170 TL **3 Claims**



1. In a sanding device having a rectangular platen for supporting a strip of sandpaper, a paper retaining system comprising a post extending upwardly from said platen adjacent each of two opposite ends thereof, said posts having a groove extending substantially vertically downwardly from the top thereof substantially parallel to said adjacent end thereof, said grooves forming outer walls adjacent said ends and inner walls, with said outer walls having a height above said groove less than said inner walls, said posts being further formed with a pair of apertures extending inwardly towards each other from opposite sides of said posts parallel to said grooves adjacent said rectangular bed; and a resilient wire having terminal ends carried by said aperture for pivotal motion thereof, a means associated with a central portion of said wire for resiliently yielding to said outer wall on being carried thereto by pivotal motion of said wire, said yielding means being retained in said groove with an end of said strip of sand paper and being prevented from yielding to said inner walls because of the increased height thereof.

4,475,318

DEVICE FOR CLAMPING CRANKSHAFTS IN GRINDING MACHINES

Peter Russ, Monheim, Fed. Rep. of Germany, assignor to Naxos-Union Schleifmittel-Und Schleifmaschinenfabrik, Frankfurt am Main, Fed. Rep. of Germany

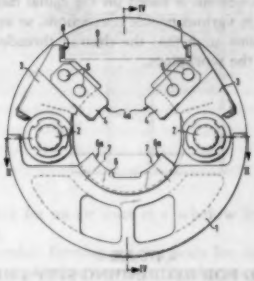
Continuation of Ser. No. 106,907, Dec. 26, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 347,092

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856037

Int. Cl.³ B24B *5/42*

U.S. Cl. 51—237 CS **10 Claims**

1. A device for clamping workpieces in machine tools, particularly for clamping crankshafts in grinding machines, comprising a rotary face plate having an end face and defining a lubricant-filled space; first and second shafts rotatably mounted in said face plate, the axis of said shafts being parallel to and equidistant from the axis of rotation of said face plate; first and second carriers affixed to the respective shafts for rotational movement therewith adjacent to said end face; first and second clamping jaws; means for separably securing said jaws to the respective carriers; a workpiece support coplanar with said jaws and adjacent to said end face; means for securing said support to said face plate so that said support and said



jaws surround a workpiece which is inserted therebetween adjacent to said end face; a feed screw rotatably mounted in said face plate and having an actuating portion disposed outside of and an externally threaded portion disposed in said space; a nut meshing with said externally threaded portion; and motion transmitting means provided in said space and cooperating with said nut to pivot said carriers through the medium of the respective shafts in response to rotation of said feed screw and to thereby move said jaws nearer to or further away from said support for the purpose of engaging or releasing a workpiece.

4,475,319

PROCESS FOR MACHINING A WORM-TYPE WORKPIECE WITH A WORM-TYPE TOOL

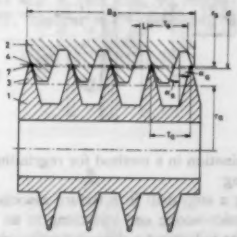
Walter Wirz, Feldstrasse 27b, 8330 Pfäffikon, Switzerland

Filed Nov. 13, 1981, Ser. No. 321,148

Claims priority, application Switzerland, Nov. 14, 1980, 8476/80

Int. Cl.³ B24B *1/00, 3/12*

U.S. Cl. 51—287 **10 Claims**



1. A process for machining a threaded-type workpiece with a threaded-type tool wherein said workpiece has a thread profile with a cylindrical head area, profile flanks and a cylindrical profile surface between opposed flanks having a given width and said tool has a thread profile with a profile head having a width less than the width of the cylindrical profile surface between opposed flanks on said workpiece each of said workpiece and tool having a given axial length, comprising

tending throughout the height of the door panel and the opposing door panel having formed thereon a vertical tongue adapted to enter said vertical groove when the two door panels are in closed stile-to-stile abutting relationship, said vertical groove and tongue being rigid throughout their lengths whereby interengagement of the groove and tongue significantly reinforces the abutting stiles against bending in the outside to inside direction with reference to the door, top and bottom vertical axis sliding bolts contained in the stile having said vertical groove and being disposed closely adjacent to one side of the groove and tongue when the latter are in fully engaged interfitting relationship, a swinging bolt having a horizontal swing axis on the stile of the door panel having said tongue and being disposed at an elevation between said top and bottom sliding bolts and having a hook-like locking extension extending forwardly of the stile on which said swinging bolt is mounted and being received lockingly through a slot provided in the opposing stile having said groove, and the hook-like locking extension when in the active door locking position being disposed closely adjacent to one side of the groove and tongue when the latter are in fully engaged interfitting relationship.

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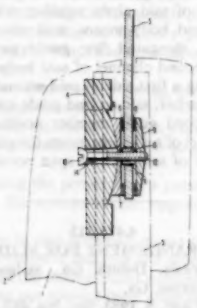
Filed Oct. 4, 1979, Ser. No. 81,893

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843633

Int. Cl.³ E05F *11/38*

U.S. Cl. 49—374 7 Claims



1. A mounting arrangement with guide means for a transparent windowpane height-displaceably guided inside a hollow space of a motor vehicle, characterized in that a mounting means is arranged on the guide means for supporting the windowpane, the mounting means is provided with a curved surface means on at least a side thereof facing the windowpane, a bearing socket means is interposed between the curved surface means and the windowpane, the curved surface means is adapted to abut the bearing socket means, and in that a fastening means operatively connects the bearing socket means with the mounting support means, the fastening means is arranged and constructed so that, in a loosened condition of the fastening means, the fastening means can be displaced together with the bearing socket means so as to enable an adjustment of the windowpane relative to the mounting means, whereby, upon a tightening of the fastening means, the adjustment of the windowpane relative to the mounting means is fixed.

4,475,315

INDUCTOR FOR MAGNETIC ABRASIVE POLISHING

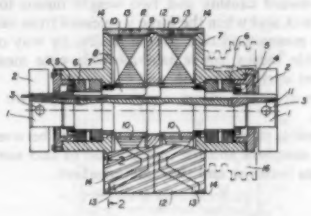
Peter K. Galabov, Boris G. Makedonski, Stefan Jo Kochev, and Maya T. Angelova, all of Sofia, Bulgaria, assignors to Centralen Mashinostroitelen Institute, Sofia, Bulgaria

Filed Feb. 11, 1983, Ser. No. 465,766

Claims priority, application Bulgaria, Feb. 11, 1982, 55331

Int. Cl.³ B24B *5/18*

U.S. Cl. 51—72 R 5 Claims



1. An inductor for centerless grinding by ferromagnetic abrasive particles, comprising an electromagnetic coil, means for supporting the coil and holding it stationary, means for energizing the coil, and a circular cylindrical shell coaxial of and surrounding the electromagnetic coil, said shell being made up of two axially aligned end rings made of ferromagnetic material and a central ring made of non-magnetic material separating said two end rings, and means for rotatably driving the shell about the coil.

4,475,316

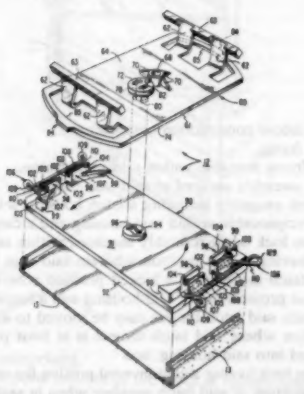
PLATEN ATTACHMENT FOR IN-LINE SANDER

William C. Dicke, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 28, 1983, Ser. No. 555,777

Int. Cl.³ B24B *23/00*

U.S. Cl. 51—170 TL 7 Claims



1. A sanding or polishing device comprising a platen for carrying a strip of sand paper, and a platen support for retaining said platen aligned thereto in an operating position, said platen and platen support including mating surfaces having, one on each, a key carried on the end of a length of supporting pin itself extending from of one of said mating surfaces, and a key slot corresponding to said key through which key may extend beyond said slot when said platen and platen supporting mating surfaces are brought together at any given angle from

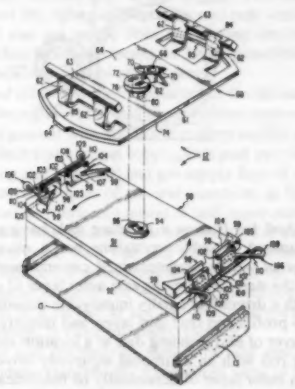
said operating position, said platen and platen support further comprising posts extending from either end of one of said mating surfaces, said posts being undercut adjacent their mating surface to receive the platen or platen support associated with the other of said mating surfaces when one is rotated relative to the other, whereby the platen is retained to said platen support by said undercuts and by said key rotated away from alignment with said key slot.

4,475,317

PAPER RETAINER FOR A SANDING DEVICE

William C. Dicke, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 28, 1983, Ser. No. 555,779
Int. Cl.³ B24B *23/00*; B24D *15/00*
U.S. Cl. 51—170 TL **3 Claims**



1. In a sanding device having a rectangular platen for supporting a strip of sandpaper, a paper retaining system comprising a post extending upwardly from said platen adjacent each of two opposite ends thereof, said posts having a groove extending substantially vertically downwardly from the top thereof substantially parallel to said adjacent end thereof, said grooves forming outer walls adjacent said ends and inner walls, with said outer walls having a height above said groove less than said inner walls, said posts being further formed with a pair of apertures extending inwardly towards each other from opposite sides of said posts parallel to said grooves adjacent said rectangular bed; and a resilient wire having terminal ends carried by said aperture for pivotal motion thereof, a means associated with a central portion of said wire for resiliently yielding to said outer wall on being carried thereto by pivotal motion of said wire, said yielding means being retained in said groove with an end of said strip of sand paper and being prevented from yielding to said inner walls because of the increased height thereof.

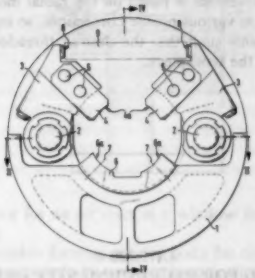
4,475,318

DEVICE FOR CLAMPING CRANKSHAFTS IN GRINDING MACHINES

Peter Russ, Monheim, Fed. Rep. of Germany, assignor to Naxos-Union Schleifmittel-Und Schleifmaschinenfabrik, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 106,907, Dec. 26, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 347,092
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856037
Int. Cl.³ B24B *5/42*
U.S. Cl. 51—237 CS **10 Claims**

1. A device for clamping workpieces in machine tools, particularly for clamping crankshafts in grinding machines, comprising a rotary face plate having an end face and defining a lubricant-filled space; first and second shafts rotatably mounted in said face plate, the axis of said shafts being parallel to and equidistant from the axis of rotation of said face plate; first and second carriers affixed to the respective shafts for rotational movement therewith adjacent to said end face; first and second clamping jaws; means for separably securing said jaws to the respective carriers; a workpiece support coplanar with said jaws and adjacent to said end face; means for securing said support to said face plate so that said support and said



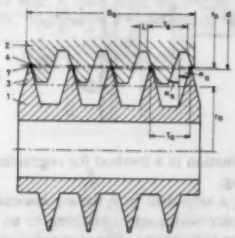
jaws surround a workpiece which is inserted therebetween adjacent to said end face; a feed screw rotatably mounted in said face plate and having an actuating portion disposed outside of and an externally threaded portion disposed in said space; a nut meshing with said externally threaded portion; and motion transmitting means provided in said space and cooperating with said nut to pivot said carriers through the medium of the respective shafts in response to rotation of said feed screw and to thereby move said jaws nearer to or further away from said support for the purpose of engaging or releasing a workpiece.

4,475,319

PROCESS FOR MACHINING A WORM-TYPE WORKPIECE WITH A WORM-TYPE TOOL

Walter Wirz, Feldstrasse 27b, 8330 Pfäffikon, Switzerland

Filed Nov. 13, 1981, Ser. No. 321,148
Claims priority, application Switzerland, Nov. 14, 1980, 8476/80
Int. Cl.³ B24B *1/00*, *3/12*
U.S. Cl. 51—287 **10 Claims**



1. A process for machining a threaded-type workpiece with a threaded-type tool wherein said workpiece has a thread profile with a cylindrical head area, profile flanks and a cylindrical profile surface between opposed flanks having a given width and said tool has a thread profile with a profile head having a width less than the width of the cylindrical profile surface between opposed flanks on said workpiece each of said workpiece and tool having a given axial length, comprising

rotating said workpiece and tool while radially moving said tool toward and away from said workpiece whereby the relationship of the rotating speeds corresponds with a basic turning speed relationship resulting from a relationship of the pitches of the workpiece and tool, moving said tool into contact with said workpiece with a combing action whereby the number of contact points is a function of the pitch of the workpiece and the length of the workpiece and tool, said contact points at any given time being located upon the same radius and the same sections of an axial section gear profile of said workpiece, and additionally moving said tool axially relative to said workpiece, which movement is based on the radial movements of the tool as well as various profile corrections, so as to displace said contact points such that the desired threaded profile is produced upon the workpiece.

4,475,320

METHOD FOR REGRINDING STEP DRILLS

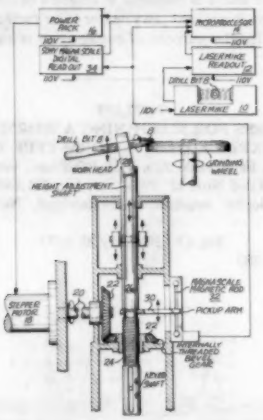
Frank R. Webster, Tukwila, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/00301, § 371 Date Mar. 10, 1982, § 102(e) Date Mar. 10, 1982, PCT Pub. No. WO83/03150, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 10, 1982, Ser. No. 375,800

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—288 **1 Claim**



1. In combination in a method for regrinding step drills, the steps including:

positioning a step drill in a fixture associated with a laser optical microscope and switching to an ON condition a switch for indicating a diameter measuring process;

rotating said step drill through 360° revolution and switching to an OFF condition said switch for initiating a measuring process;

removing said step drill from said fixture associated with a laser optical microscope; and, then

positioning said step drill in a workhead for activating a grinder

adjusting a workshead stop in response to said diameter measuring to control said regrinding of said step drill.

4,475,321

METHOD OF TRUEING OF GRINDING DISKS

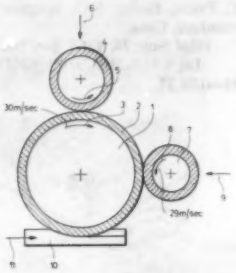
Hans-Robert Meyer, Hamburg, Fed. Rep. of Germany, assignor to Ernst Winter & Sohn GmbH & Co., Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 303,711, Sep. 18, 1981, abandoned. This application Jan. 23, 1984, Ser. No. 572,957

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035635

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—325 **4 Claims**



1. A method for trueing a grinding disk having an outer layer of diamond or cubic crystalline boron nitride during rotation thereof with a predetermined circumferential speed, comprising the steps of engaging said outer layer of said grinding disk with a driven but axially immovable diamond trueing roll so as to profile and true said layer; and directly engaging said outer layer of said grinding disk at a location spaced from said trueing roll with an additional separately driven trueing disk with an outer layer of ceramically or bakelitically bound silicon carbide or corundum, rotating with a relative peripheral speed of 0.5–1.0 meters per second relative to the peripheral speed of said grinding disk and continuously adapting itself to said profile of said grinding disk so as not to enter and alter said profile but to offset the binder relative to a working surface of the grains of said grinding disks.

4,475,322

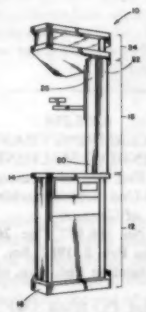
MEDICAL SEE-THROUGH COLUMNS

Joseph L. Russo; Richard Sonder, both of New York, N.Y., and Wesley W. Schwartz, Oshkosh, Wis., assignors to Square D Company, Palatine, Ill.

Filed Dec. 31, 1980, Ser. No. 221,875

Int. Cl.³ E04F *19/00*

U.S. Cl. 52—27 **15 Claims**



1. A medical power service column for use in a patient room having a floor and ceiling and sources of electricity and gases,

said medical column supplying electrical power, lighting and gases and also providing a centralized support for medical equipment, said medical column comprising:

a base having a substantially triangular cross-sectional shape, said base having means for attaching said medical column to the floor of the patient room;

a vertically elongated lower column section having an upper end and a lower end for containing medical and electrical equipment and means for supporting medical and electrical equipment on its outer surface, said lower end of said lower column section being in contact with the base end said lower column section having a substantially triangular cross-sectional shape;

a see-through section comprising a vertically elongated post having a first end attached to said upper end of said lower column section and a second end extending upward toward the ceiling of the room; said post containing electrical and gas supply lines and having electrical outlets, switches, lights and means for holding medical equipment on the outer surface of said post;

an upper column section connected to the second end of the see-through section, said upper column section in substantial alignment with said lower column section and containing electrical and gas supply lines and provisions for attaching said electrical and gas supply lines of said medical column to sources of gas and electricity in the ceiling of the patient room; and means in said upper column section for attaching said medical column to the ceiling of the patients room such that said medical column is positionable adjacent a patient bed and wherein the substantially triangular shape of the lower column section allows free access to a patient in the bed while supporting medical equipment in close proximity thereto;

wherein said see-through section of said medical column provides a substantially unobscured view of the room.

4,475,323

BOX TRUSS HOOP

Fred R. Schwartzberg, Denver, and William H. Tobey, Littleton, both of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Apr. 30, 1982, Ser. No. 373,571
Int. Cl.³ E04H *12/34*
U.S. Cl. 52—111 **26 Claims**

1. A box truss hoop comprising a plurality of circumferentially adjacent collapsible boxes arranged whereby said box truss hoop is expandable radially from a compact, folded configuration to a deployed hoop configuration, each of said boxes comprising:

a. a collapsible inner frame and a collapsible outer frame disposed parallel and radially apart; and

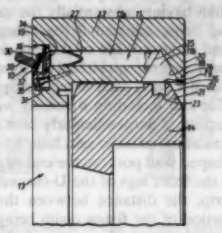
b. a plurality of connecting side members extending between said inner and said outer frames.

4,475,324

VALVES

Egil Flakk, Spjelkavik, Norway, assignor to Kva-Spil Limited, Spjelkavik, Norway

Filed Apr. 12, 1982, Ser. No. 367,577
Claims priority, application Norway, May 8, 1981, 811559
Int. Cl.³ E06B *7/14*
U.S. Cl. 52—209 **8 Claims**



1. A valve for an air duct in a window frame, said valve comprising

a first member forming a valve body for closing off the air duct and including a rounded head portion at one end and a cavity spaced from said one end;

a second member pivotally connected with said first member to define a holder and including an elongated cavity receiving said head portion of said first member in pivotal relation and a second cavity spaced from said elongated cavity;

a third member pivotally connected with one of said first and second members and releasably mounted in the other of said first and second members, said third member including a first rounded head portion pivotally received in said cavity of said first member and a second rounded head portion releasably received in said cavity of said second member; and

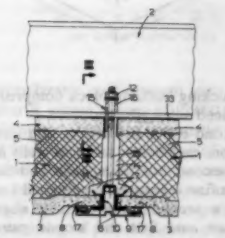
a sheet-like elastically yielding member mounted on a flat face of said first member.

4,475,325

ASSEMBLY FOR FIXING WALL PANELS TO A REARWARDLY POSITIONED SUPPORT STRUCTURE AND A METHOD FOR FIXING WALL PANELS TO SUCH SUPPORT STRUCTURE BY MEANS OF THIS ASSEMBLY

Jan H. Veldhoen, Binnenweg 39, 7391 GL, Twello, Netherlands

Filed Mar. 5, 1982, Ser. No. 354,931
Claims priority, application Netherlands, Mar. 9, 1981, 8101131
Int. Cl.³ E04H *1/00*
U.S. Cl. 52—235 **10 Claims**



1. An assembly for fixing wall panels to a rearwardly positioned support structure, including a plurality of support rails having their longitudinal extent directed perpendicularly to

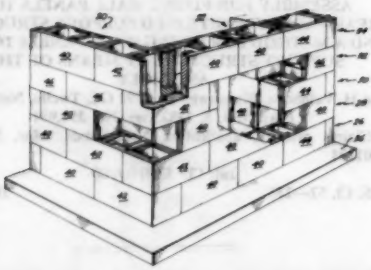
that of the wall panels, said panels having a front skin, a rear skin and intermediate synthetic foam layer, said assembly comprising: a jointing strip having substantially the same length as the wall panels and including a front wall and two wall portions of substantially U-shaped cross-section, said wall portions being disposed behind the front wall, said wall portions being spaced from each other and oppositely directed with respect to each other, said wall portions being adapted for receiving only the front skins of adjacent wall panels; elastic sealing gaskets of rubber or the like having substantially the same length as the wall panels and being adpated to be clamped between the jointing strip and the front side of the adjacent wall panels; a plurality of short fixing clamps slidably disposed in the jointing strip and including a hole; each fixing clamp being formed as an omega profile and including a central wall portion of U-shaped cross-section, a perpendicularly bent end edge joining said wall portion at either side, said hole being formed in the web of the U-shaped wall portion, the end edges being adapted to bear against the front legs of the U-shaped wall portions of the jointing strip, the distance between the legs of the U-shaped wall portion of the fixing claim being slightly smaller than the distance between the webs of the U-shaped wall portions of the jointing strip; a bolt for each fixing clamp, said bolt having a nut co-operating therewith, said bolt being dimensioned so as to traverse the joint between the adjacent wall panels; the head or the nut of said bolt being adapted to be received in the U-shaped wall portion of the cooperating fixing clamp so as to be locked against rotation; and a bracket for each of said bolts, said bracket having an eye for the passage of the bolt, said bracket having a slot which can be hooked over a flange of a support rail of the support structure and further comprising an abutment edge extending perpendicularly to the slot and adapted to fittingly engage the end of the respective flange of the support rail of the support structure, which end is remote from the slot in the bracket.

4,475,326

INTERLOCKING BUILDING BLOCKS AND SYSTEM USING THE SAME

Gary N. Hanson, P.O. Box 172, Snoqualmie, Wash. 98065

Filed Feb. 17, 1982, Ser. No. 349,593
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—286 **26 Claims**



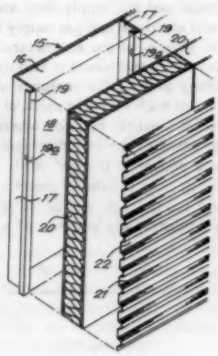
1. An interlocking building block comprising:
a pair of spaced sidewalls, and
first and second end walls joining said sidewalls and being spaced from each other, said end walls having respective first and second end faces, each end face of said block carrying a first longitudinally aligned tongue and groove pair and a second longitudinally aligned tongue and groove pair, said first and second pairs being laterally spaced on said end face at locations equidistant from the center of the end face, said first pair having a tongue positioned adjacent a groove, said second pair having a tongue positioned adjacent a groove, said tongue and groove pairs on said second end face being positioned at substantially identical locations as said tongue and groove pairs on said first end face, said tongue and groove pairs further being positioned so that each tongue and groove pair on each of said faces is complementary to and engages a respective groove and tongue pair on an abutting end face of an identical block that is longitudinally aligned with said building block.

4,475,327

ROOF SYSTEM

Allan O'Regan, and Denis McGloughlin, both of Dublin, Ireland, assignors to Soldek Limited, Dublin, Ireland

Filed Jan. 19, 1982, Ser. No. 340,890
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—404 **3 Claims**

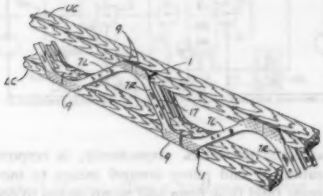


1. An exterior wall structure for a building comprising:
a base having a height and width of a predetermined dimension;
a side wall extending along a height dimension on each side of said base;
a flange end being formed on each side wall and being spaced a predetermined distance from said base to define a recess;
said base, side walls and flanged ends forming shallow U-shaped panels with said base forming an inner wall;
a plurality of said inner wall facing panels being arranged in side-by-side abutting relation with the side walls thereof being substantially vertical;
a sheet of insulation material located in the recess of each inner wall facing panel; and
a plurality of corrugated outer wall facing panels secured to the flanged ends of the inner wall facing panels, the corrugations in the outer wall facing panels being substantially horizontal and extending substantially the full height of the outer wall facing panels whereby the inner and outer wall facing panels cooperate to form a rigid structure resulting from the mutually perpendicular orientations of the corrugations in the outer panels and the side walls of the inner panels;
wherein the base of each inner wall facing panel is flat and the inner wall facing panels interlock with their bases flush to form a continuous flat inner surface to the wall structure.

4,475,328
WEB MEMBER

Milton E. Reeder, Ballwin, and Walter G. Moehlenpah, Ladue, both of Mo., assignors to Moehlenpah Industries, Inc., St. Louis, Mo.

Continuation of Ser. No. 63,791, Aug. 6, 1979, Pat. No. 4,348,850. This application Jul. 27, 1982, Ser. No. 402,376
The portion of the term of this patent subsequent to May 24, 2083, has been disclaimed.
Int. Cl.³ E04C 3/02
U.S. Cl. 52—693 16 Claims



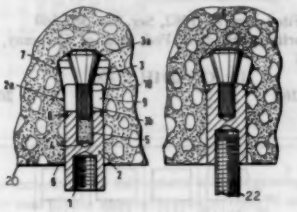
1. A relatively flat sheet metal structural web member for interconnecting a pair of generally parallel spaced-apart wood chord members to form a floor truss or the like, each of said chord members having opposing side faces substantially coplanar with opposing side faces of the other chord member, said web member being generally V-shaped, comprising first and second substantially coplanar legs integrally joined at one of their respective ends, a plurality of teeth struck from the one end of each leg and extending generally perpendicularly from one face, constituting the inside face, of the web member, and a plurality of teeth struck from the other end of each leg and extending generally perpendicularly from the inside face of the web member, said teeth at opposite ends of the legs being adapted to be driven into coplanar side faces of the chord members, the side margins of each leg being bent generally at right angles to the leg on the inside face of the web member to form flanges extending longitudinally of the leg at opposite sides thereof, the flange toward the middle of the web member constituting an inner flange and the other an outer flange, the outer flange of each leg having opposite end portions, one of which terminates short of an end of the leg in an edge extending generally perpendicularly to the inside face of the leg and generally parallel to the teeth struck from the end of the leg for abutment along substantially the entire length of the edge against a wood chord member when the teeth at that end of the leg are driven into the chord member, and the inner flange of each leg having opposite end portions, one of which terminates short of the other end of the leg in an edge extending generally perpendicularly to the inside face of the leg and generally parallel to the teeth struck from the end of the leg for abutment along substantially the entire length of the edge against the other wood chord member when the teeth at that end of the leg are driven into the chord member.

4,475,329
ANCHORING EXPANSIBLE FASTENER

Artur Fischer, Weinhalde 34, D-7244 Tumlingen, Waldachtal 3, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,396
Int. Cl.³ E04B 1/49; E21D 2/00; F16B 13/06
U.S. Cl. 52—704 10 Claims

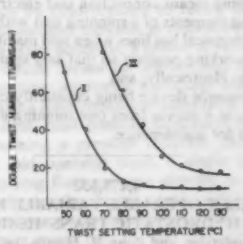
1. An anchoring expansible fastener for use in supporting structures and adapted to be anchored by impact in a cylindrical hole with enlarged tapering undercut provided in a supporting structure, comprising an expandable anchor having a leading end and a trailing end and provided with a cylindrical portion and a slotted expandable portion at the leading end thereof, said expandable anchor being formed with a bore having a first portion extended in said cylindrical portion and a second portion projecting through said slotted expandable portion up to said leading end; and an expander pin including an expander cone and a shank connected to said expander cone and partially extended into said first portion of the bore, the length of said expander pin corresponding approximately to the length of said bore; at least one distructible capsule disposed in said first portion of the bore and facing said shank, said capsule accomodating a curable bonding agent, said anchor, upon the application of the impact thereto being driven into said hole, whereby said expander cone becomes inserted into said slotted expandable portion and said expander pin is driven into said bore of the anchor over the whole length thereof so that said shank destroys said capsule and releases said bonding agent, which upon curing adhesively secures said shank of the pin to the expandable anchor.



4,475,330
HIGH TWIST POLYESTER MULTIFILAMENT YARN AND FABRIC MADE THEREFROM

Akio Kimura, Ashiya; Osamu Wada, Takatsuki; Kohichi Ichara, and Michikage Matsui, both of Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 3, 1982, Ser. No. 384,493
Int. Cl.³ D02G 3/04; D01F 6/62
U.S. Cl. 57—245 7 Claims

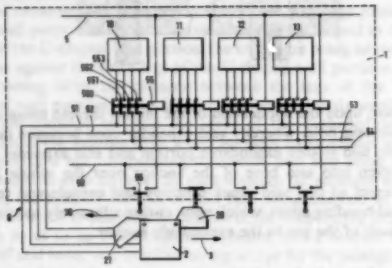


1. A high twist polyester multifilament yarn having a twist of a twist multiplier K within a range of 15,000 to 25,000 made from polyester filaments consisting essentially of at least one member selected from the group consisting of a copolymer of at least two units selected from the group consisting of ethylene terephthalate, trimethylene terephthalate, and tetramethylene terephthalate, a blend of at least two polymers selected from the group consisting of polyethylene terephthalate, polytrimethylene terephtalate and a blend of at least one of said polymers and at least one of said polymers having a breaking elongation of not more than 60% and a shrinkage in boiling water of not more than 6%.

4,475,331
SPINNING MACHINE, ESPECIALLY AN OPEN-END SPINNING MACHINE, WITH A PLURALITY OF SPINNING UNITS AND WITH A MAINTENANCE DEVICE MOVABLE ALONG THE MACHINE

Johann C. Promoli, Ingolstadt; Rolf Guse, Reutlingen, and Sohrab Tabibi, Pfullingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, A.G., Ingolstadt, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,360
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1981, 3123281
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—263 **20 Claims**



1. An apparatus for use on an open-end spinning machine and the like of the type having a plurality of spinning units, a plurality of electrically controlled operating elements associated with each of said spinning units, a maintenance device movable along the spinning machine which has an electrical power source which can be coupled to the electrical operating elements of a particular spinning unit for supplying electrical power to the operating elements, said apparatus comprising:

a plurality of electrical bus lines;

a separate one of said bus lines associated with each one of said operating elements of each of said spinning units to electrically control said one operating element;

a switching means associated with each spinning unit actuated in response to said maintenance device arriving at a working position in front of said spinning unit;

said switching means connecting said electrically controlled operating elements of a spinning unit with respective ones of said electrical bus lines when said maintenance device is at said working position so that said spinning unit is connected-in electrically; and

said maintenance device being constantly connected to said bus lines as it moves from one spinning unit to another as required for maintenance.

4,475,332
MANUALLY OPERABLE VARIABLE BLEED FOR HYDROSTATIC TRANSMISSION

Ronald L. Anderson, and John R. Harms, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Feb. 22, 1982, Ser. No. 350,989
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—329 **3 Claims**

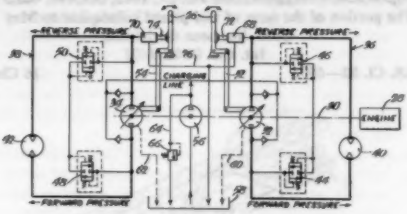
1. A closed loop hydrostatic transmission, comprising:

reversible pump means and reversible motor means hydraulically joined in a closed loop,

pump control means for selectively controlling said pump means to direct fluid under pressure to said motor means for operation of said motor means in forward and reverse directions,

charge means for replenishing fluid in said closed loop from a fluid reservoir, and

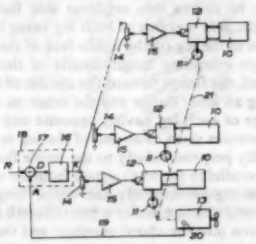
variable flow bleed valve means hydraulically joined to said closed loop for bleeding hydraulic fluid therefrom to permit replenishment with fluid from said charge means, said valve means being operatively connected with said pump control means by valve control means whereby fluid flow through said valve means proportionately increases and decreases, respectively, in response to the operation of said pump control means to increase and decrease fluid flow from said pump means to operate said motor means in at least one of said forward and reverse directions.



4,475,333
DEVICES FOR LIMITING THE POWER OUTPUT OF A HYDRAULIC ASSEMBLY

L. Östen Tordenmalm, S:a Sandby, Sweden, assignor to Akermans Verkstad AB, Eslöv, Sweden

Filed Jun. 10, 1980, Ser. No. 158,348
Claims priority, application Sweden, Jun. 15, 1979, 7905272
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—395 **9 Claims**



1. A control system for controlling by limiting power output of a hydraulic assembly used in an excavator or the like which comprises in combination:

a single driving motor,

plural hydraulic pump means operatively powered by said driving motor,

plural driven motors powered by said plural pump means, there being an equal number of said driven motors and pump means matched so that one said pump means powers one said driven motor,

means for sensing the speed of said driving motor,

means for continuously comparing the speed sensed with a standard,

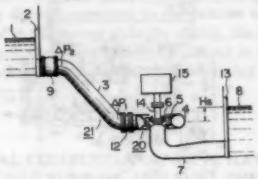
said comparing means adapted to energize a controller when said driving motor is about to be overloaded,

said controller having means to independently alter the hydraulic flow rate of each said plural pump means by priority and thereby relieve said driving motor before being overloaded whereby the power output of said plural pump means is limited so that the sum of the maximum power output of said plural pump means may safely exceed that of the driving motor.

4,475,334
METHOD OF AND SYSTEM FOR CONTROLLING HYDRAULIC TURBINE

Takao Kuwabara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,258
Claims priority, application Japan, Aug. 13, 1980, 55-110248
Int. Cl.³ F01B *25/04*
U.S. Cl. 60—398 **26 Claims**



1. A method of controlling a hydraulic turbine during its operation in a system including an upper water reservoir, a lower water reservoir, a water channel connecting the upper reservoir and the lower reservoir together, a hydraulic turbine connected in the water channel to be operated by the water passing through the channel and the turbine including guide vanes to control the quantity of water passing through the turbine to thereby control the operation of the turbine, and a load to be powered by the turbine wherein such method comprises the steps of:

drivingly connecting the turbine to the load;

passing water through the turbine under the control of the guide vanes to operate the turbine and thereby drive the connected load;

sensing a change in the load while the operating turbine is driving the load;

adjusting the guide vanes in response to the sensed change in load to thereby correspondingly adjust the flow of the water through the turbine in accordance with the change in the load, which adjusting the guide vanes produces a corresponding change in pressure on the upstream side of the turbine in the water channel and on the downstream side of the turbine in the water channel;

providing a control signal correlated to the adjusting rate of the guide vanes and rate of pressure changes in the water channel caused thereby;

throttling the water flowing in the water channel at a distance spaced serially in the water channel from the turbine and at a rate correlated to the rate of the guide vanes, only when the control signal indicates an adjusting rate of the guide vanes that is higher than a reference rate, so that said throttling is automatic and simultaneous with said adjusting and said throttling will reduce the severity of the pressure change within the water channel on the side of the turbine in common with the throttling; and

discontinuing said throttling in response to the signal indicating an adjusting rate of the guide vanes lower than a reference rate.

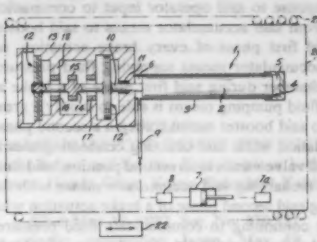
4,475,335
FREE PISTON HEAT ENGINES

Gordon Davey, Cumnor Hill, England, assignor to National Research Development Corporation, London, England

Filed Feb. 3, 1983, Ser. No. 463,504
Claims priority, application United Kingdom, Feb. 12, 1982, 8204165
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—520 **6 Claims**

1. A heat engine comprising:

a free piston, adapted to execute reciprocatory movement of predetermined maximum stroke, and a non-contact movement-resisting device associated with said piston, said non-contact device being located so as to oppose further

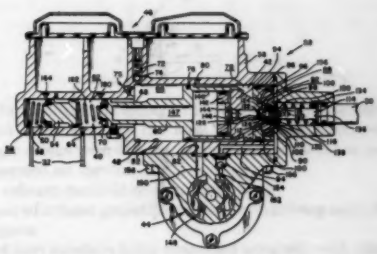


said reciprocatory movement with increasing force whenever said piston approaches either end of said stroke.

4,475,336
BRAKING APPARATUS FOR AN AUTOMOTIVE VEHICLE

Dean E. Runkle, LaPorte, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 19, 1981, Ser. No. 294,111
Int. Cl.³ F15B *7/00*
U.S. Cl. 60—545 **5 Claims**



1. A braking apparatus for an automotive vehicle having brakes actuatable by fluid pressure to retard motion of said vehicle, an input member movable in response to an operator input to effect a brake actuation, a source of electrical energy, and electrical circuit means for distributing said electrical energy; said braking apparatus including: master cylinder means for supplying fluid pressure to said brakes in response to said operator input, fluid pressure responsive booster means substantially defining a pressure chamber and providing a force assisting said operator input, a single fluid pumping means for supplying fluid pressure directly to said pressure chamber via a check valve during a brake actuation, and fluid pressure accumulator means for receiving fluid pressure from said fluid pumping means only via said pressure chamber and for supplying fluid pressure to said booster means during the brake actuation, said electrical circuit means including switch means closing in response to said operator input during every brake actuation to supply electrical energy to said single fluid pumping means only during said brake actuation to commence a first phase thereof wherein said fluid pumping means communicates fluid pressure to said pressure chamber, said booster means including operator-operated valve means for modulating said assisting force in response to operator input, said fluid pressure accumulator means including second valve means for in a first position closing communication of fluid pressure from said accumulator means to said booster means and in a second position opening said communication to supply fluid pressure to said booster means, said booster means and said second

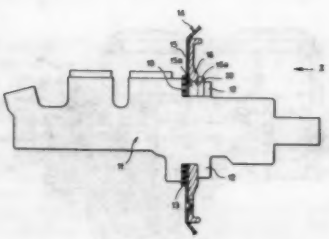
valve means including coacting connecting means for operatively connecting said operator-operated valve means with said second valve means to shift the latter to said second position in response to said operator input to communicate fluid pressure from said accumulator means to said booster means during said first phase of every brake actuation, said fluid pressure accumulator means supplying fluid pressure to said pressure chamber during said first phase of a brake actuation until said fluid pumping means is able to supply a greater fluid pressure to said booster means to begin a second phase of said brake actuation while said coacting connecting means retains said second valve means in its second position, said fluid pumping means recharging said accumulator means with fluid pressure during said second phase of a brake actuation while at the same time continuing to communicate fluid pressure to said pressure chamber during said second phase of a brake actuation.

4,475,337

RAPID-ASSEMBLY BRAKING CONTROL UNIT

Guy Meynier, Bondy, France, assignor to Societe Anonyme DBA, Paris, France

Filed Jul. 21, 1982, Ser. No. 400,498
Claims priority, application France, Sep. 16, 1981, 81 17479
Int. Cl.³ B60T *13/46*
U.S. Cl. 60—547.1 **6 Claims**



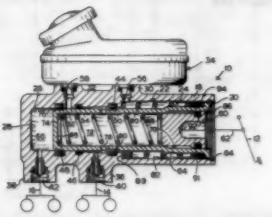
1. A braking control unit, comprising a master cylinder having an elongated body and an assistance servo booster operatively coupled to said master cylinder, said assistance servo booster including a casing having an end wall onto which said master cylinder is mounted by one mounting portion thereof, said mounting portion of said master cylinder being integral with said body and comprising a shoulder part and, axially offset therefrom, angularly spaced lugs having a radial extension less than the radial extension of said shoulder part and substantially coplanar mounting surfaces facing said shoulder part, said end wall of said assistance servo booster having an inner surface, a substantially flat outer surface and a contoured cutout with angularly spaced notches substantially similar in shape to the profile of a transverse section passing through a lug of said mounting portion of said master cylinder, and resilient sealing means on said mounting portion adjacent said shoulder part, whereby in assembled condition said shoulder part and lugs bear on opposite sides of said end wall with said resilient sealing means compressed between said shoulder part and said outer surface of said end wall after the lugs have been introduced into said assistance servo booster from outside through the notches of said cut-out and rotated to an angularly offset orientation relative to said notches, the lugs rotated until at least one of said lugs abuts a positioning stop formed in said inner surface of said end wall and disposed adjacent one of said notches, said end wall comprising an inner portion of a shell constituting part of said casing and a reinforcing plate member forming said inner surface of said end wall.

4,475,338

MASTER CYLINDER

Robert F. Gaiser, Stevensville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1982, Ser. No. 353,319
Int. Cl.³ B60T *11/20*
U.S. Cl. 60—562 **1 Claim**



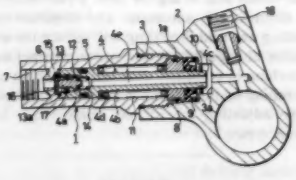
1. A master cylinder for a brake system comprising a housing with a pair of pistons cooperating with the housing to substantially define a pair of pressure chambers communicating, respectively, with a pair of brake circuits, the housing defining a bore to movably receive the pair of pistons, a pair of seals fixedly disposed within the housing bore and cooperating with one of the pair of pistons to define fluid passages between a reservoir and the pair of pressure chambers, respectively, the one piston being movable during braking to simultaneously close both fluid passages so that fluid pressure is generated in the pair of pressure chambers, the housing bore defining a shoulder separating a small diameter portion from a large diameter portion, the pair of seals being fixedly disposed within the small diameter portion, the one piston defining a radial clearance with the large diameter portion, a first spring extending between the pair of pistons to bias the other piston to a rest position within the housing bore, and a second spring extending between the shoulder and the one piston to bias the latter to a rest position within the housing bore.

4,475,339

APPARATUS FOR CONTROLLING BRAKING LIQUID PRESSURE

Hidefumi Inoue, Ohmiya, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1983, Ser. No. 458,091
Claims priority, application Japan, Jan. 26, 1982, 57-9044[U]
Int. Cl.³ B60T *8/26, 11/34*
U.S. Cl. 60—591 **10 Claims**



1. An apparatus for controlling braking liquid pressure including a hollow substantially cylindrical body having its one end threadably engaged in a mounting hole in the casing of a master cylinder and its other end operatively connected to a rear wheel cylinder for supplying pressure from said master cylinder to said rear wheel cylinder, the hollow body being formed with an axially extending bore, a plunger slidably disposed within the bore and formed therein with a passage which allows pressure supply from the master cylinder to the rear wheel cylinder, and a valve body housed within the passage and shiftable with respect to said plunger and master

cylinder to open or close the passage, the plunger being responsive to the magnitude of an input liquid pressure supplied from the master cylinder by reciprocating to cooperate with the valve body to open or close the passage, thereby producing a proportionate reduction in the input liquid pressure before it is output to the rear wheel cylinder, the hollow body being formed of a single member, an annular retainer having an inner diameter less than that of the bore, the annular retainer being fitted into the bore at the end of the bore nearer the master cylinder, with one end of the plunger projecting through the annular retainer, the end face of the projecting end of the plunger being directly opposed to the bottom surface of the mounting hole in the master cylinder casing, the movement of said one plunger end being positively limited in one direction by the abutment thereof against said mounting hole bottom surface.

4,475,340

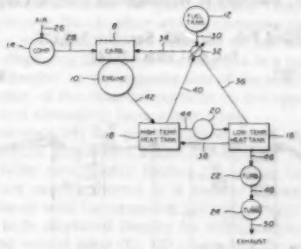
INTERNAL COMBUSTION ENGINE HAVING AN EXHAUST GAS TURBINE AND FUEL PREHEATING USING EXHAUST GAS HEAT AND METHOD OF OPERATION THEREOF

Ching-Ho Tseng, c/o Mr. Chung-Hsien Chen, 7307 Caracas Dr., Houston, Tex. 77083

Filed Sep. 3, 1982, Ser. No. 414,599

Int. Cl.³ F02B *35/00, 41/10*

U.S. Cl. 60—598 **12 Claims**



1. A power system comprising:

(a) an internal combustion engine,

(b) a compressor means operably connected to said engine for delivering compressed air to said engine for combustion in admixture with a fuel in a combustion chamber thereof,

(c) a high temperature heat tank means operably connected to the exhaust of said engine for receiving engine exhaust gases therein,

(d) a low temperature heat tank means operably connected to said high temperature heat tank means for receiving therein engine exhaust gases from said high temperature heat tank means,

(e) a booster fan means operably connected between said high temperature heat tank means and low temperature heat tank means for increasing the flow of exhaust gases from said high temperature heat tank means into said low temperature heat tank means,

(f) a gas turbine means operably connected to said low temperature heat tank means for receiving therein engine exhaust gases from said low temperature heat tank means, for recovery compression energy from exhaust gases,

(g) a fuel tank means, and

(h) a fuel line extending from said fuel tank means through said low temperature heat tank means and thereafter through said high temperature heat tank means for indirect contact of fuel in said fuel line with engine exhaust gases, for heating said fuel, whereby said hot exhaust gases are partially cooled before passing through said booster fan means, and further cooled thereafter, and operably connected to said engine for delivering preheated fuel to said engine for combustion in admixture with air in a combustion chamber thereof.

4,475,341

EXHAUST MANIFOLD DEVICE FOR ENGINES

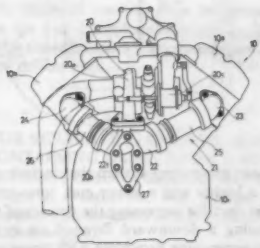
Kazuo Inoue, Tokyo, and Kentaro Kato, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1982, Ser. No. 379,751

Claims priority, application Japan, May 19, 1981, 56-73044[U]

Int. Cl.³ F02B *37/00*; F01N *7/10*

U.S. Cl. 60—605 **4 Claims**



1. In an engine including at least one pair of cylinders arranged substantially in the form of a V and a turbosupercharger driven with exhaust gases of said cylinders to supply compressed air thereto,

an exhaust manifold device, comprising:

a pair of exhaust gas inlet members for receiving said exhaust gases;

said inlet members being connected integrally with either of said cylinders;

a pair of communication members for conducting said exhaust gases;

said communication members having the longitudinal lengths thereof variable and either ends thereof connected with either of said inlet members;

an exhaust gas collecting member for collecting said exhaust gases to supply same to said turbosupercharger; and

said collecting member being connected with the respective other ends of said communication members;

each of said communication members comprising an outer tube secured at either end thereof to said collecting member and either of said inlet members and formed at least partially along the longitudinal direction thereof with a bellows and an inner tube provided through said outer tube, said inner tube having one end thereof secured to either of said inlet members and said collecting member and the other end thereof axially movable relative to said outer tube;

said communication member further comprising first and second support tubes secured respectively to said inlet member and said collecting member;

said outer tube being fixedly fitted on said first and second support tubes; and

said inner tube being fixedly fitted at the outer circumferential portion near said one end thereof and slidably fitted at another circumferential portion near said other end thereof in said first and second support tubes.

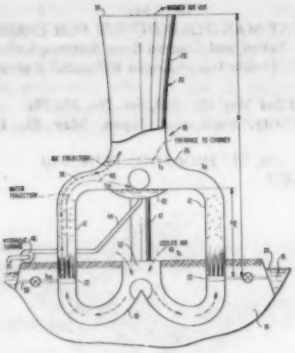
4,475,342
METHOD AND MEANS FOR LIFTING WATER AND GENERATING POWER THEREFROM

Gad Assaf, Rehovot, Israel, assignor to Lucien Y. Bronicki, Yavne, Israel, a part interest

Division of Ser. No. 097,439, Nov. 26, 1979, Pat. No. 4,370,859. This application Nov. 15, 1982, Ser. No. 441,678

Int. Cl.³ F03G 7/04

U.S. Cl. 60—641.6 **8 Claims**



1. In a power generating system that includes an elongated duct having a higher and a lower end, sprayers for spraying water into the duct for increasing the density of the air therein thereby inducing a downward flow of air in the duct, the improvement comprising providing a lift tower at the outlet of the elongated duct for upwardly redirecting the air exiting from the bottom of the elongated duct, spraying water-droplets into the lower end of the lift tower, the droplets being of such size that drag forces on the droplets cause them to rise to an upper level of the tower, separating the droplets from the air at said upper level by reducing the upward component of the air velocity, collecting the droplets in a reservoir, and returning water in the reservoir to the lower end of the tower through hydraulic turbine means.

4,475,343
METHOD FOR THE GENERATION OF HEAT USING A HEAT PUMP, PARTICULARLY FOR PROCESSES RUN ONLY AT HIGH TEMPERATURES

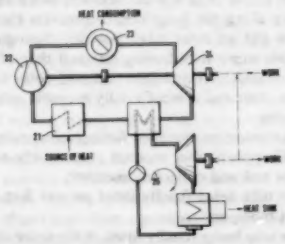
Günther Dibelius, and Reinhold Pitt, both of Aachen, Fed. Rep. of Germany, assignors to Bercwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,464

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018450

Int. Cl.³ F01K 23/02, 27/00

U.S. Cl. 60—648 **8 Claims**



1. In a method for the deliverance of heat by means of a heat pump of the type wherein a heat carrier fluid is heated by a heat source; said heat carrier fluid is compressed with temperature elevation in a compressor subsequent to the heat source; heat is delivered from said heat carrier fluid to a heat-admitting process (heat delivery); and said heat carrier fluid is allowed to expand in a gas turbine furnishing a part of the compression energy, the improvement wherein

said heat carrier fluid has a temperature of more than about 800° C. before said heat delivery and is delivered to a heat-admitting process running only at temperatures above about 800° C. with a satisfactory rate of reaction, and

work collectively provided to drive the compressor, as far as not being furnished by said gas turbine, is furnished mainly by the thermal energy of the always gaseous heat carrier fluid which is still available after the heat delivery in that said heat carrier fluid delivers said thermal energy to a thermal power process which furnishes work to drive said compressor,

with or without some of the heat energy which can be delivered by said heat-admitting process and which is available at a temperature below the temperature of said heat delivery.

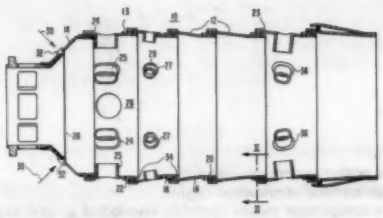
4,475,344
LOW SMOKE COMBUSTOR FOR LAND BASED COMBUSTION TURBINES

Stephen E. Mumford, and Edward W. Tobery, both of West Chester, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 16, 1982, Ser. No. 349,125

Int. Cl.³ F02C 3/14

U.S. Cl. 60—757 **9 Claims**



1. A combustor basket for heating compressor discharge gases to drive a turbine, comprising:

a plurality of ring segments, each of said ring segments having an inner surface and an outer surface, adjoined in telescoping fashion to form a generally cylindrical portion of said basket, said cylindrical portion having an upstream end, a downstream end, and a longitudinal axis, and being of substantially constant diameter;

a combustor dome, having an upstream end and a downstream end, adjoining the upstream end of said cylindrical portion of said basket, said dome being generally conical with diameter increasing in the downstream direction;

means adjoining said dome for injecting fuel into a combustion zone in the upstream end of said cylindrical portion of said basket; and

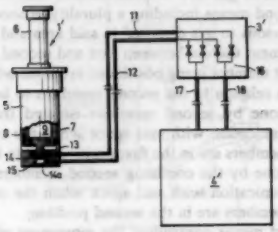
a plurality of generally oval-shaped scoops in a ring segment in the upstream end of said cylindrical portion for directing a flow of compressed air into said combustion zone, each of said scoops having a long dimension and a short dimension with the long dimension generally parallel to the longitudinal axis of said cylindrical portion;

and said cylindrical portion of said basket further having a second plurality of scoops generally circular in shape for directing an additional flow of compressed air into said combustion zone in a slightly upstream direction.

4,475,345
REFRIGERATOR WITH PNEUMATIC AND WORKING GAS-SUPPLY CONTROL

Hans-Joachim Forth, Cologne, and Rolf Heisig, Wellerswist, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,208
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 3201496
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6 **3 Claims**



1. A refrigerator, comprising:

a cold producer (1) having a chamber and a displacer (8) in the chamber having a driving piston (14) with a seal (14*a*) across the chamber for pneumatically reciprocating the displacer in the chamber with an operating gas introduced into a portion (15) of the chamber on one side of the seal and displacing thereby a working gas in a portion (13) of the chamber on the opposite side of the seal, whereby the volumes of the chamber portions on the opposite sides of the seal alternately have a maximum;

a compressor (4) for providing the gasses at appropriate pressures; gas-control means (3) separate from the cold producer controllably feeding the gasses form the compressor supply thereof in a manner to reciprocate the displacer with the operating gas and provide the working gas to be displaced thereby for refrigeration; and

first and second tubes (11, 12) connecting the cold producer to the separate gas-control means for respectively feeding the working and operating gasses from the latter to the chamber portions of the former respectively having the gasses for reciprocating and displacing operation thereof, the volume of each tube being not greater than the maximum volume of the chamber on the opposite sides of the displacer respectively fed gas thereby.

4,475,346
REFRIGERATION SYSTEM WITH LINEAR MOTOR TRIMMING OF DISPLACER MOVEMENT

Neils O. Young, Free Union, Va.; Robert Henderson, Reading, and Peter J. Kerney, Arlington, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

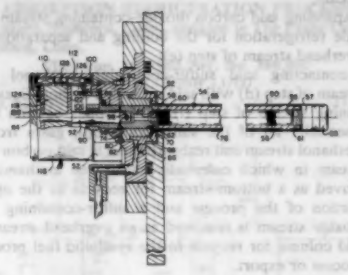
Filed Dec. 6, 1982, Ser. No. 447,192
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6 **9 Claims**

1. A refrigerator having a gas displacer which reciprocates in a housing to displace gas in a working volume of gas through a regenerator, the fluid pressure in the working volume varying between maximum and minimum pressures, the refrigerator further comprising:

a spring volume of gas having a fluid pressure intermediate the maximum and minimum pressures in the working volume;

a piston element extending axially from the displacer into the spring volume, the cross sectional areas of the piston element and the displacer being such that the pressure differential across the piston element, between the working volume and the spring volume, drives the displacer through a substantially full stroke, substantially retarded relative to the fluid pressure in the working volume, in each direction; and

electrically powered linear motor drive means for driving the displacer in each of two directions to trim the move-

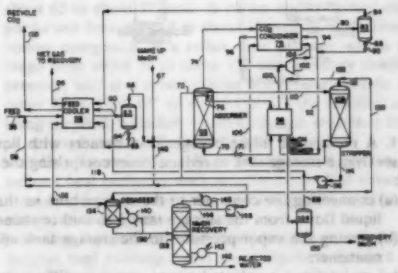


ment of the displacer resulting from the pressure differential across the piston the load handling capability of the linear motor drive means being substantially less than the load of the driven displacer.

4,475,347
PROCESS FOR SEPARATING CARBON DIOXIDE AND SULFUR-CONTAINING GASES FROM A SYNTHETIC FUEL PRODUCTION PROCESS OFF-GAS

William P. Hegarty, Wescosville, and William P. Schmidt, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 16, 1982, Ser. No. 418,517
Int. Cl.³ F25J 3/04
U.S. Cl. 62—17 **17 Claims**



2. A process for the separation of an off-gas from a fuel production process containing carbon dioxide, sulfur-containing gases and lower hydrocarbons by separating said off-gas into an essentially sulfur-free, light fuel gas and a sulfur-containing carbon dioxide gas, comprising the steps of:

(a) introducing a stream of methanol into a pressurized feed off-gas containing carbon dioxide, sulfur gases and lower hydrocarbons;

(b) cooling the methanol-containing feed off-gas against process product streams in a heat exchanger to condense any water contained in said off-gas;

(c) separating said off-gas into a dry, overhead off-gas stream and a substantially carbon dioxide-free water and methanol bottom stream in a phase separator;

(d) contacting the dry off-gas with a second stream of methanol in an absorption column to remove essentially all of the sulfur-containing gases from the off-gas and absorb them in said methanol in which the essentially sulfur-free off-gas is removed as an overhead stream of said column

and the sulfur-containing methanol is removed as a bottom stream from said column;

(e) cooling said overhead stream to partial condensation to phase separate an essentially sulfur-free light fuel gas for export and a predominantly carbon dioxide-containing stream;

(f) expanding said carbon dioxide-containing stream to provide refrigeration for the cooling and separation of the overhead stream of step (e);

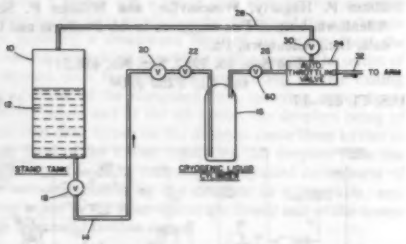
(g) contacting said sulfur-containing methanol bottom stream of step (d) with said expanded carbon dioxide-containing stream of step (f) in a stripper column to strip essentially all of the sulfur-containing gases from said methanol stream and reabsorb them in said carbon dioxide stream in which essentially sulfur-free methanol is removed as a bottom stream for recycle to the upstream portion of the process and a sulfur-containing carbon dioxide stream is removed as an overhead stream from said column for recycle to the synthetic fuel production process or export.

4,475,348

METHOD AND APPARATUS FOR FILLING CRYOGENIC LIQUID CYLINDERS

Scott Remes, Prior Lake, Minn., assignor to Minnesota Valley Engineering, Inc., New Prague, Minn.

Filed Jul. 26, 1982, Ser. No. 401,602
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—55 **5 Claims**



1. A method of filling cryogenic containers with liquified gases from a storage tank to reduce losses comprising the steps of:

(a) connecting the container to the storage tank so that the liquid flows from the storage tank into said container;

(b) sensing the vapor pressures in the storage tank and the container;

(c) maintaining a selected vapor pressure differential between said tank and said container during filling by setting a throttling valve to vent vapor from said container to the atmosphere, the pressure in said container being less than the pressure in said tank, said valve automatically venting sufficient vapor to maintain said selected pressure differential.

4,475,349

CONTINUOUSLY PUMPING AND REACTIVATING GAS PUMP

Thomas H. Batzer, Livermore, and Wayne R. Call, Tracy, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1983, Ser. No. 476,309
Claims priority, application Japan, Mar. 18, 1982, 57-041682
Int. Cl.³ B01D *8/00*
U.S. Cl. 62—55.5 **15 Claims**

1. A gas pump apparatus for pumping gas from an enclosed space; comprising:

first means defining at least one area in gas flow communication with said space;

a plurality of first members disposed in said area, each first member having a gas pumping surface for capturing gas;

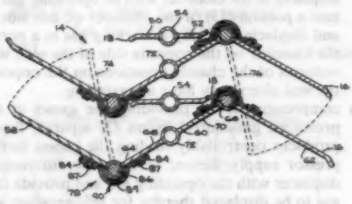
second means for selectively isolating said gas pumping surfaces in said area from gas flow communication with said space and exposing said gas pumping surfaces in said area to gas flow communication with said space;

third means for controlling said second means to selectively isolate a number less than all of said gas pumping surfaces from and simultaneously expose all other gas pumping surfaces to gas flow communication with said space;

said second means including a plurality of second members impervious to gas disposed in said area and mounted for movement therein between first and second positions;

each first member being positioned in a zone within said area and in relation to the second members to be confined in said zone by second members isolated from gas flow communication with said space when the confining second members are in the first position and to be exposed in said zone by the confining second members to gas flow communication with said space when the confining second members are in the second position;

said third means controlling the movement of said second members between the first and second positions to position a number less than all of said second members in the first position to confine a number less than all of said gas pumping surfaces and simultaneously position all other



second members in the second position to expose all other gas pumping surfaces;

each first member including a first panel defining a length and an exposed surface extending its length that forms the gas pumping surface;

each second member including a second panel impervious to gas;

each second panel defining a length and is disposed in said area spaced from and adjacent to another second panel to define a zone between the adjacent second panels extending the length of the adjacent panels;

each first panel being positioned in the zone between adjacent second panels;

each second panel having stationary and movable sections extending its length with each movable section pivotally secured relative to the stationary section for movement between the first and second positions, the stationary and movable sections of adjacent second panels forming an enclosure confining the first panel positioned in the zone between the adjacent second panels when the movable sections are in said first position and forming a path for gas flow communication between said space and the first panel positioned in said separate zone when the movable sections are in said second position; and

said third means controlling the movement of the movable sections of the second panels between the first and second positions to position a number less than all of said movable sections in the first position and simultaneously position all other movable sections in the second position.

4,475,350

METHOD OF MAKING MOULDS

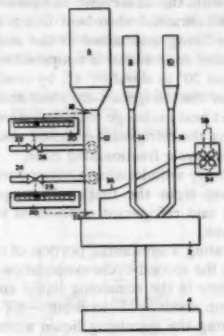
Stephen Norman Waldron, Wetherby, England, assignor to BOC Limited, London, England

Division of Ser. No. 129,923, Mar. 13, 1980, Pat. No. 4,304,286, which is a continuation of Ser. No. 959,409, Nov. 9, 1978, abandoned. This application Aug. 17, 1981, Ser. No. 293,721

Claims priority, application United Kingdom, May 26, 1978, 7823615; Oct. 25, 1978, 7841898

Int. Cl.³ F25D *13/06, 17/00*

U.S. Cl. 62—57 **3 Claims**



1. A method of cooling foundry sand obtained from a quarry comprising the steps of:

drying the quarried sand;

passing said dried sand to a fluidising chamber having apertures in the bottom thereof;

supplying a flow of air through apertures to fluidise said sand in said chamber;

passing a cryogenic material selected from the group consisting essentially of liquid nitrogen, liquid carbon dioxide, and liquid argon in heat exchange with said flow of air prior to the supply thereof through said apertures to cool said air such that said sand is cooled as it is being fluidised; and

discharging said cooled sand from said chamber.

4,475,351

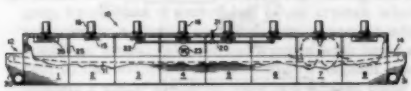
DUAL-FLOW CRYOGENIC FREEZER

David J. Klee, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 9, 1983, Ser. No. 521,788

Int. Cl.³ F25D *13/06*

U.S. Cl. 62—63 **21 Claims**



1. The method of freezing products by contact with a cryogenic fluid which comprises continuously passing such products through an elongated path comprising a plurality of contiguous vapor recirculating cooling zones, introducing cryogenic liquid refrigerant into one or more of such cooling zones in a substantially central region of such path, wherein such liquid is vaporized by expansion prior to contact with any such products, recirculating the vapor formed by the expansion in the zones of said central region into contact with products passing through said region, inducing a split flow of the vapor from said central region such that one portion thereof flows towards the products inlet end of said path and a second portion flows towards the products discharge end of said path each in direct contact with products moving through the path, and recirculating the vapor individually within each of said plurality of cooling zones.

4,475,352

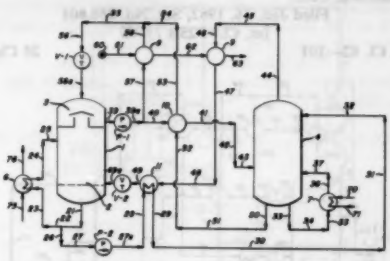
ABSORPTION REFRIGERATION PROCESS

Leon Lazare, Stamford, Conn., assignor to The Puraq Company, Stamford, Conn.

Filed Jun. 16, 1982, Ser. No. 388,800

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—101 **27 Claims**



1. A cyclic absorption refrigeration process, employing, in a refrigerant component and in an absorbent component, mutually soluble, normally liquid compounds, whose normal boiling points differ by at least about 50° C., comprising the steps of:

(a) rectifying a refrigerant-enriched absorbent component, in a fractionation zone, to provide an overhead refrigerant component stream, comprising from about 93 to about 99 mole % of the lower-boiling compound and from about 1 to about 7 mole % of the higher-boiling compound, and a bottoms absorbent component stream, comprising from about 65 to about 95 mole % of the higher-boiling compound and from about 5 to about 35 mole % of the lower-boiling compound, at a reflux zone pressure within the range from about 30 to about 150 mm. mercury absolute pressure, and at a reboiler zone temperature within the range from about 65° to about 110° C., the reboiler zone being supplied, by indirect heat exchange, with heat from an external source of low-grade heat;

(b) cooling the overhead refrigerant component stream by indirect heat exchange with an external coolant stream;

(c) transferring the cooled overhead refrigerant component stream to an evaporation zone;

(d) cooling the bottoms absorbent component stream by indirect heat exchange with the refrigerant-enriched absorbent component stream;

(e) transferring the cooled bottoms absorbent component stream to an absorption zone;

(f) evaporating a substantial portion of the refrigerant component in the evaporation zone maintained at a pressure within the range from about 2 to about 13 mm. mercury absolute pressure, to achieve a temperature in a remaining portion of the refrigerant component within the range from about −12° to about +15° C.;

(g) circulating the remaining portion of the refrigerant component to a refrigeration zone where, by indirect heat exchange, an external refrigeration heat exchange fluid is cooled to a temperature within the range from about −8° to about +20° C.;

(h) conducting the evaporated portion of the refrigerant component to the absorption zone for mixing therein with the absorbent component to provide the refrigerant-enriched absorbent component, said absorption zone being maintained at the same pressure as the evaporation zone and at a temperature within the range from about 20° to about 60° C., by continuously cooling a portion of the

refrigerant-enriched absorbent component in indirect heat exchange with the external coolant stream;

(i) returning the refrigerant-enriched absorbent component to the fractionating zone; and

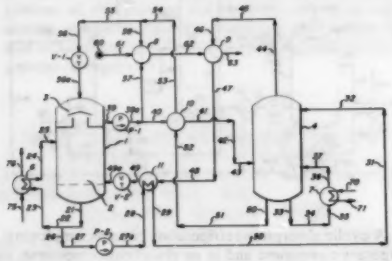
(j) continuously withdrawing a minor part of the refrigerant component from the evaporation zone and injecting said refrigerant component into the reflux zone.

4,475,353

SERIAL ABSORPTION REFRIGERATION PROCESS

Leon Lazare, Stamford, Conn., assignor to The Puraq Company, Stamford, Conn.

Filed Jun. 16, 1982, Ser. No. 388,801
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—101 **26 Claims**



1. A cyclic absorption refrigeration process, employing, in a first absorption refrigeration cycle, in a refrigerant component and in an absorbent component, mutually soluble, normally liquid compounds, whose normal boiling points differ by at least about 50° C., and in a second absorption refregeration cycle, substantially anhydrous ammonia as refrigerant component and aqueous ammonia, containing from about 40 to about 70 wt. % water, as absorbent component, comprising the steps of:

(a) rectifying a refrigerant-enriched absorbent component, in a first-cycle fractionation zone, to provide an overhead refrigerant component stream, comprising from about 93 to about 99 mole % of the lower-boiling compound and from about 1 to about 7 mole % of the higher-boiling compound, and a bottoms absorbent component stream, comprising from about 65 to about 95 mole % of the higher-boiling compound and from about 5 to about 35 mole % of the lower-boiling compound, at a reflux zone pressure within the range from about 30 to about 150 mm. mercury absolute pressure, and at a reboiler zone temperature within the range from about 65 to about 110° C., the reboiler zone being supplied, by indirect heat exchange, with heat from an external source of low-grade heat;

(b) cooling the overhead refrigerant component stream by indirect heat exchange with an external coolant stream;

(c) transferring the cooled overhead refrigerant component stream to a first-cycle evaporation zone;

(d) cooling the bottoms absorbent component stream by indirect heat exchange with the refrigerant-enriched absorbent component stream;

(e) transferring the cooled bottoms absorbent component stream to a first-cycle absorption zone.

(f) evaporating a substantial portion of the refrigerant component in the first-cycle evaporation zone maintained at a pressure within the range from about 2 to about 13 mm. mercury absolute pressure, to achieve a temperature in a remaining portion of the refrigerant component within the range from about −12° to about +15° C.;

(g) collecting an ammonia-water effluent mixture as enriched absorbent component from a second-cycle absorption zone;

(h) rectifying the ammonia-water mixture in a second-cycle fractionation zone to provide an overhead refrigerant component stream, comprising substantially anhydrous ammonia, and a bottoms absorbent component stream, comprising aqueous ammonia;

(i) circulating the remaining portion of the refrigerant component to a first-cycle refrigeration zone where, by indirect heat exchange, second-cycle ammonia overhead and ammonia-water effluent mixture are cooled to a temperature within the range from about −8° to about +20° C.

(j) conducting the evaporated portion of the refrigerant component to the first-cycle absorption zone for mixing therein with the absorbent component to provide the refrigerant-enriched absorbent component, said absorption zone being maintained at the same pressure as the evaporation zone and at a temperature within the range from about 20° to about 60° C., by continuously cooling a portion of the refrigerant-enriched absorbent component in indirect heat exchange with the external coolant stream;

(k) returning the refrigerant-enriched absorbent component to the first-cycle fractionating zone;

(l) continuously withdrawing a minor part of the refrigerant component from the first-cycle evaporation zone and injecting said refrigerant component into the first-cycle reflux zone;

(m) evaporating a substantial portion of the anhydrous ammonia in the second-cycle evaporation zone to achieve a temperature in the remaining liquid ammonia within the range from about −15° to about −60° C.; and

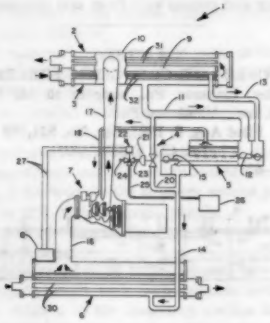
(n) circulating the remaining liquid ammonia to a second-cycle refrigeration zone where, by indirect heat exchange, an external heat exchange fluid is cooled to a temperature within the range from about −10° to about −55° C.

4,475,354

SYSTEM FOR DRAINING LIQUID REFRIGERANT FROM A SUBCOOLER IN A VAPOR COMPRESSION REFRIGERATION SYSTEM

George J. Akerhielm, Manlius, and Zoltan P. Mandy, Camillus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,976
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—117 **7 Claims**



1. A drain system for draining refrigerant from the shell side of a tube in shell subcooler in a vapor compressor refrigeration system to prevent freezing of undesirable amounts of a heat exchange medium in the tubes of the subcooler at shutdown of the refrigeration system, said drain system comprising:

a drain means for removing refrigerant from the subcooler;

a valve means for opening and closing the drain means;

a sensor means for sensing operation of the vapor compression refrigeration system; and

a control means for controlling the operation of the valve means to close the drain means when the sensor means

senses operation of the vapor compression refrigeration system and to open the drain means when the sensor means does not sense operation of the vapor compression refrigeration system.

4,475,355

CONTINUOUS PACKED BED WASH COLUMN

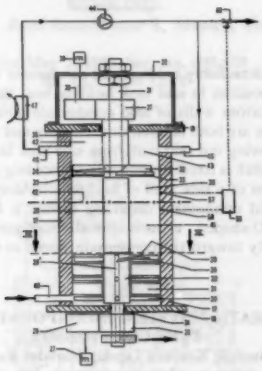
Henricus A. C. Thijssen, Son, and Bernardus G. M. Van der Malen, Hagestein, both of Netherlands, assignors to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijn-Theehandel B.V., Utrecht, Netherlands

Continuation-in-part of Ser. No. 330,592, Dec. 14, 1981, abandoned, which is a division of Ser. No. 46,758, Jun. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 866,169, Dec. 30, 1977, abandoned. This application Sep. 16, 1982, Ser. No. 418,832

Claims priority, application United Kingdom, Jan. 12, 1977, 1086/77; Jun. 23, 1978, 27792/78

Int. Cl.³ B01D *9/04*

U.S. Cl. 62—123 **12 Claims**



1. Apparatus for separating the ice crystals in a slurry of an aqueous solution and ice crystals, from said solution and washing said ice crystals with an aqueous wash liquid, comprising in operative cooperation:

(a) enclosure means defining a first cylindrical space;

(b) means for feeding in said slurry in said first cylindrical space;

(c) means for withdrawing solution from said slurry in said first cylindrical space while retaining said ice crystals, producing a thickened slurry;

(d) enclosure means defining a second cylindrical space;

(e) means for substantially eliminating channelling and clogging, by creating a packed bed of ice crystals which is subjected to a continuous translatory movement while a washfront aqueous solution and aqueous wash liquid adjacent to the washfront are substantially stagnant, and by creating a stable washfront lying in a straight plane perpendicular to said translatory movement of said packed bed of ice crystals including means adapted to transfer and for transferring said thickened slurry from said first cylindrical space into said second cylindrical space through one end and moving said bed continuously through said second cylindrical space and out the other end;

(f) means for maintaining a substantially stagnant layer of said aqueous wash liquid in said second cylindrical space at its feed out side creating a flat, stable washfront between said aqueous solution and said wash liquid perpendicular to the axis of said cylindrical space; and

(g) at the feed out end of said second cylindrical space, means for continuously disintegrating said packed bed of ice crystals and feeding out the product of disintegration.

4,475,356

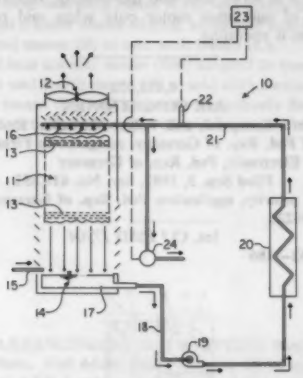
BLOWDOWN APPARATUS AND METHOD

Hal B. Lewis, 3800 Plantation Dr., Greensboro, N.C. 27410

Filed Mar. 21, 1983, Ser. No. 477,511

Int. Cl.³ F25B *39/04*

U.S. Cl. 62—183 **8 Claims**



1. A method of controlling blowdown of an open recirculating cooling water system in direct proportion to the heat load on the system having a refrigerant condenser means and a cooling tower, to control the concentration of impurities in the water and to improve the efficiency of the system, comprising the steps of: sensing the temperature of the circulating water as it passes from the refrigerant condenser to the cooling tower by a sensor means, transmitting a signal from the sensor means to a control means having a temperature sensitivity adjustment, transmitting a signal from the control means to a blowdown valve means and regulating said blowdown valve means in accordance with the temperature changes of the circulating water.

4,475,357

ICE PRODUCTION RATE SELECTOR FOR ICE MAKER

William J. Linstromberg, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 27, 1982, Ser. No. 423,737

Int. Cl.³ F25C *1/00*

U.S. Cl. 62—157 **14 Claims**

13. In a refrigeration apparatus having means defining a refrigerated compartment, refrigeration means for refrigerating said compartment, a thermostatic switch for connecting said refrigeration means to a power source in response to a sensed temperature, and an ice making mechanism disposed in said compartment and including a timer motor for operating said mechanism to effect periodic ice harvesting operations, the improvement comprising:

means connecting a first terminal of said timer motor to a first terminal of said power source; and,

a selector switch connected to a second terminal of said

timer motor, said selector switch being movable between a first position connecting said second timer motor terminal substantially directly to a second terminal of said power source for continuous operation of said timer motor, and a second position connecting said second timer motor terminal to said second terminal of said power source in series with said thermostatic switch for operation of said timer motor only when said refrigeration means is operating.

4,475,358

AIR CONDITIONER

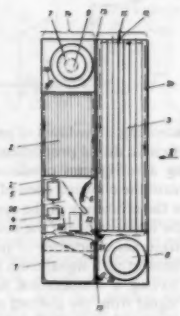
Rolf Seifert, Ennepetal, and Volker Schlicker, Radevormwald, both of Fed. Rep. of Germany, assignors to Firma Ing. Rolf Seifert Electronic, Fed. Rep. of Germany

Filed Sep. 3, 1982, Ser. No. 414,852

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136226

Int. Cl.³ F25D *17/04*

U.S. Cl. 62—186 **10 Claims**



1. Air conditioner for cooling electrical parts, particularly electronic components, situated in a cabinet or the like, comprising a coolant circulation consisting of evaporator, condenser and compressor, whereby the air inside a housing heated by the electrical parts is blown by a ventilator past an evaporator provided with a corresponding heat exchange surface and is blown back into the cabinet or the like to be cooled, and whereby, further, a condenser is provided in order to emit the heat absorbed by the evaporator to the outside air moved by a ventilator, characterized in that the housing of the air conditioner is subdivided into a first area and into a second area by means of a wall sealing the respective air streams from one another; in that all components, including the evaporator, the compressor, and part of the air conditioner sensitive to dirt, dust, etc., are situated in the first area; means for circulating air from said cabinet through said first area to flow over the evaporator and compressor and parts sensitive to dust and for recirculating the cold air back to the cabinet; and in that the condenser with its heat exchange surfaces which are essentially insusceptible to dirt and, further, a ventilator are situated in the second area which is traversed by ambient air as a result of the ventilator.

4,475,359

AIR CONDITIONING APPARATUS

Hideki Sano, Fujinomiya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

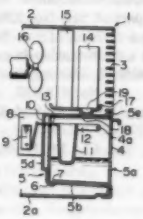
Filed Oct. 20, 1982, Ser. No. 435,358

Claims priority, application Japan, Oct. 27, 1981, 56-159098[U]; Oct. 30, 1981, 56-161216[U]; Oct. 31, 1981, 56-163043[U]; Oct. 31, 1981, 56-163044[U]

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—272 **8 Claims**

1. In an air conditioning apparatus comprising a housing, a refrigerator inclusive of an evaporator encased in the housing, and a condensate disposing device comprising an electric switch for on-off controlling the operation of the refrigerator, a condensate tank for receiving condensate delivered from the evaporator, and a float swingably provided in the condensate tank for initiating the on-off control operation of the electric switch according to the quantity of condensate stored in the condensate tank, said condensate disposing device further comprising a tank holding box constructed integrally with said housing for detachably receiving said condensate tank, and



means for detachably holding said condensate tank at a predetermined position in said tank holding box, the improvement wherein bottom walls of said condensate tank and said tank holding box are both tapered downwardly and toward a direction of drawing out said tank from said tank holding box, said electric switch is fixedly mounted on a holding plate formed as an extension of a side wall of said tank holding box, and said float of said condensate disposing device is formed into an inverted U-shaped cross-sectional configuration opening downwardly toward the condensate stored in said tank.

4,475,360

REFRIGERATION SYSTEM INCORPORATING SCROLL TYPE COMPRESSOR

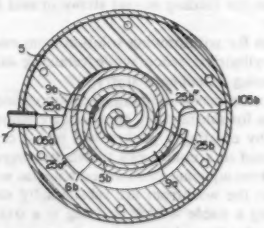
Kazutaka Suefuji; Kensaku Oguni; Sumihisa Kotani, and Kenji Tojo, all of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 18, 1983, Ser. No. 458,923

Claims priority, application Japan, Feb. 26, 1982, 57-29010

Int. Cl.³ F25B *13/00*

U.S. Cl. 62—324.1 **13 Claims**



1. A refrigeration system comprising:

a scroll type compressor including a fixed scroll member having an end plate and a spiral warp protruding upright therefrom, an orbiting scroll member having an end plate and a spiral wrap protruding upright therefrom, a discharge port formed in a central portion of said end plate of said fixed scroll member, a suction port formed in a peripheral portion of said end plate of said fixed scroll member, at least one gas injection port formed through the thickness of said end plate of said fixed scroll member in a portion of said end plate near said spiral wrap, at a position spaced from the wall of said spiral wrap by a radial dis-

tance smaller than a thickness of said spiral wrap, a discharge pipe connected to said discharge port, a suction pipe connected to said suction port, and means for causing an orbiting movement of said orbiting scroll member with respect to said fixed scroll member without permitting the same to rotate around its own axis;

a refrigerant circuit means connected between said suction pipe and said discharge pipe of said scroll type compressor and including a four-way valve, indoor heat exchanger, first pressure reducer, gas-liquid separator, second pressure reducer, and an outdoor heat exchanger; and

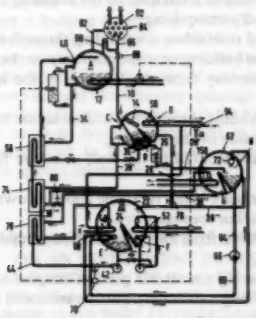
a gas injection passage means connected between a gas outlet formed in an upper part of said gas-liquid separator and said gas injection port, so as to permit the refrigerant gas in the upper part of said gas-liquid separator to be additionally supplied into the compression chambers under compression in said scroll type compressor.

4,475,361

MULTI-EFFECT HEAT-PUMP FOR HEATING AND COOLING

Georg Alefeld, Josef-Raps-Strasse 3, Munich, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,659
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—476 **6 Claims**



1. A heat-pump comprising

a first working fluid (WF) loop including

first means (A) operating in a first, relatively high pressure range and arranged to receive heat for producing WF vapor of relatively high pressure, and absorbent partially depleted of WF, by heating absorbent relatively rich in WF;

second means (B) coupled to receive said relatively high pressure WF vapor to produce liquid WF and heat of condensation;

third means (F) coupled to receive heat and liquid WF and a relatively low pressure to produce relatively low pressure WF vapor, and

fourth means (E) coupled to receive said relatively low pressure WF vapor and relatively low pressure depleted absorbent to produce absorbent relatively rich in WF, and heat of absorption, and

fifth means (**42, 44**) to return absorbent relatively rich in WF at said first, relatively high pressure to said first means (A);

a second WF loop in WF fluid connection with said first loop and including

sixth means (C) operating in a second, relatively high pressure range which is lower than said first relatively high pressure range and connected by absorbent conduit means to said first and fourth means (A, E), said sixth means comprising heat-exchange means (**158**) adapted to be coupled to a heat transfer circuit

seventh means (D) in WF vapor communication with said sixth means,

first fluid connection means (**28**) for supplying liquid WF from said seventh means (D) to said third means (F), and

second fluid connection means (**38**) for supplying absorbent from said sixth means (C) to said fourth means (E);

first heat transfer means adapted to transfer heat from said second means (B) to said sixth means (C);

second heat transfer means (**160**) adapted to transfer heat from said fourth means (E) to said sixth means (D), and

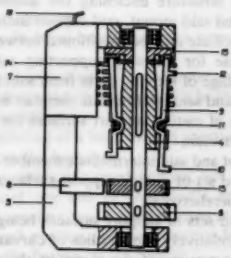
eighth means (**84, 166**) adapted to selectively disabling at least partially at least one of said heat transfer means.

4,475,362

DESIGN ARRANGEMENT FOR KNITTING MACHINES

Wolfgang Rose, Karl Marx Stadt, German Democratic Rep., assignor to VEB Kombinat Textima, Karl Marx Stadt, German Democratic Rep.

Filed Nov. 8, 1982, Ser. No. 440,029
Claims priority, application German Democratic Rep., Nov. 17, 1981, 2349117
Int. Cl.³ D04B *7/00*
U.S. Cl. 66—75.2 **8 Claims**



1. A design arrangement for a knitting machine having a needle bed with a plurality of needles arranged with a predetermined pitch, the design arrangement comprising

a plurality of carriages movable along a needle bed;

a design wheel arranged on each of said carriages;

a plurality of plate bars arranged on each of said design wheels in correspondence with a pitch of needles for actuating the latter and movable between a plurality of selectable positions, each of said plate bars having a foot;

a selector and a time signal generator arranged on each of said carriages, said selector having a plurality of staggered selection pieces which are electromechanically bringable in two positions and cooperate with said feet of said plate bars to select the latter;

a movable information storage which is moved by said carriages and an immovable storage arranged to supply information to said selectors so as to actuate the latter; and

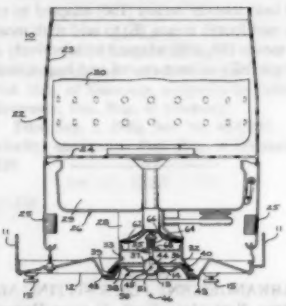
a disk having a side facing toward said plate bars and provided at said side with arresting formations arranged to arrest said plate bars upon their selection by said selection pieces and until their running over the needles, said arresting formations including a wedge extending over substantially half of a disk periperhy and a counter guide.

4,475,363

ADJUSTABLE DUAL NODE SUPPORT ASSEMBLY FOR WASHING MACHINE

Benjamin M. Thomson, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 6, 1983, Ser. No. 501,363
Int. Cl.³ D06F 37/24
U.S. Cl. 68—23.3 3 Claims



1. A support assembly for a washing machine having an assemblage of working parts for agitation of fabrics in a liquid for washing the fabrics and centrifugal extraction of liquid from the fabrics, the support assembly comprising:

a mount secured to the assemblage of working parts and adapted to move therewith during operation of the machine;

a cabinet structure enclosing the assemblage of working parts and said mount, said cabinet including a base;

an intermediate member positioned between said mount and said base for movably supporting said mount and the assemblage of moving parts from said base;

said base and said intermediate member being formed with a first set of mating support surfaces for sliding movement therebetween;

said mount and said intermediate member being formed with a second set of mating support surfaces for sliding movement therebetween;

one of said sets of support surfaces being smoothly curved with a relatively short radius of curvature to form a first node for movement of said mount, the other of said sets of support surfaces being smoothly curved with a relatively long radius of curvature to form a second node for movement of said mount;

means providing the interface of said one set of support surfaces with a relatively low coefficient of friction and means providing the interface of said other set of support surfaces with a relatively high coefficient of friction so that relative movement between said intermediate member and either of said base and said mount tends to be between said one set of support surfaces;

said intermediate member and the one of said base and said mount forming said one set of support surfaces coming into interfering engagement upon a predetermined amplitude of movement of said mount so that relative movement between said one set of support surfaces is substantially inhibited and relative movement between said other set of support surfaces occurs in response to movement of said mount in excess of the predetermined amplitude; and

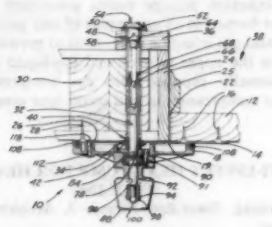
adjusting means interacting between said intermediate member and said mount for adjusting the frictional contact pressure between said other of said sets of support surfaces for predetermining at what amplitude of force relative movement between said other set of support surface occurs.

4,475,364

DOOR-BARRING LOCK APPARATUS

Carl A. Frank, River Vale, N.J., assignor to Claire D. Frank; Gerald A. Frank; Anne Spisak; John J. Palermo; G. Kendall Parmelee and Susan L. Burns

Filed Aug. 17, 1981, Ser. No. 293,167
Int. Cl.³ E05B 9/08, 65/06; E05C 3/04, 3/10
U.S. Cl. 70—139 16 Claims



1. Door-barring lock apparatus for holding an inwardly-swinging hinged door in its closed position in the doorway in the wall structure of a building or for releasing the door to be opened inwardly comprising:

an elongated rotatable rod extending through the wall structure of the building near the doorway on the opposite side of the doorway from the location of the hinges for the door,

said rod extending through the wall structure from the inside to the outside of the building,

anchor means secured to the wall structure for preventing rotation,

said rod normally being rotatable about its own axis relative to said anchor means,

a lock available from the outside of the building near said doorway,

said lock having a rotatable portion coupled to said rod,

said lock having a stationary portion anchored in position by said anchor means,

said lock having a locked condition and an unlocked condition,

said lock in its locked condition preventing said rod from rotating relative to said anchor means,

said lock in its unlocked condition permitting said rod to be rotated,

a door bar member movably mounted near the inside surface of the wall structure and being movable between extended and retracted positions,

said bar member when in its extended position engaging the inside surface of the door on the opposite side from the hinges for barring the door against opening inwardly,

said bar member in its retracted position being located away from the door for unbarring the door and for allowing the door to be opened inwardly,

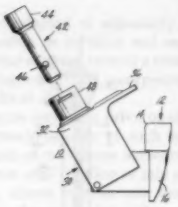
coupling means normally coupling said bar member to the inner end of said rotatable rod for enabling the door to be barred or unbarred from the outside by unlocking said lock and then turning the rod, and

a handle near said bar member associated with said coupling means for decoupling said bar member from said rod for permitting said bar member to be moved between its extended and retracted positions by a person inside of the building regardless of the fact that said lock is in its locked condition, for enabling the door to be barred or unbarred from the inside of the building by manipulation of said handle.

4,475,365
ELECTRICAL BOX LOCK ASSEMBLY

James A. Swisher, 2497 Castellon Dr. North, Jacksonville, Fla. 32217

Filed Jul. 24, 1981, Ser. No. 286,583
Int. Cl.[3] B65D *55/14*
U.S. Cl. 70—159 5 Claims

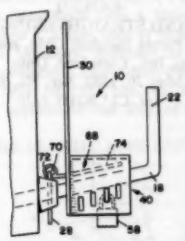


1. A lock housing assembly for attachment to a container having a cover to receive a lock of the barrel lock type to enable said assembly to retain the cover in the closed condition, said assembly comprising a support block for attachment to a side wall of the box and a cover retainer hinged to the support block so as to be pivotable toward and away from the side wall of the box in a plane perpendicular to that of the cover between a locking position in which a portion of the cover retainer is positioned in the path taken by the adjacent edge of the cover when the cover is opened and an unlocking position in which said portion is out of said path, said cover retainer and said support block having openings which become aligned only when said cover retainer is in the locking position, said aligned openings being dimensioned to receive, when aligned, a barrel lock to lock said cover retainer and said support block against relative movement.

4,475,366
PROTECTIVE DEVICE FOR INSTRUMENTS MOUNTED ON AN INSTRUMENT PANEL

Michael Marneris, 2679 Brady Ct., Santa Clara, Calif. 95051

Filed Jun. 1, 1981, Ser. No. 268,841
Int. Cl.[3] B60R *25/02;* B64C *13/12, 13/14;* E05B *65/12*
U.S. Cl. 70—258 9 Claims



1. A protective device for preventing the theft of instruments from an instrument panel having at least one control column extending therefrom with a lock pin inserted therein to prevent movement thereof comprising:

a protective cover;

means for lockingly mounting the protective cover in a position immediately adjacent the instrument panel including:

at least one open-ended aperture formed in a first edge of the protective cover for receiving the at least one control column;

a shroud connected to the protective cover along the periphery of the at least one open-ended aperture and extending outwardly therefrom for covering a portion of the at least one control column;

a bar removably supported by the shroud, the shroud and the bar cooperating to extend about the column;

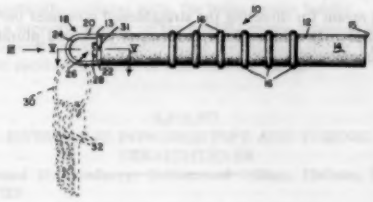
means for locking the bar to the shroud; and

an elongate rod having a first end portion forming an eye adapted to be received on the lock pin and a second end portion positionable intermediate the at least one shroud and control column to prevent removal of the lock pin.

4,475,367
KEY HOLDER

David A. Raitto, P.O. Box 125, 12 Maple St., Wheelwright, Mass. 01094

Filed Mar. 16, 1982, Ser. No. 358,673
Int. Cl.[3] A47G *29/10*
U.S. Cl. 70—456 R 7 Claims



1. Key holder comprising:

(a) an elongated cylindrical handle having a generally smooth outer surface,

(b) an annular ridge extending from said outer surface, and

(c) a key retainer at one end of the handle for holding keys, said key retainer comprising:

(1) a fixture consisting of a base with an aperture and a loop extending from the base, and

(2) a fastener consisting of a shank portion, one end of which is fixed to said one end of the handle and extending through said aperture, and a head portion at the opposite end of the shank portion, said head portion being adapted for retaining the fixture on the handle.

4,475,368
METHOD AND APPARATUS FOR RESTRAIGHTENING CONTAINER SUPPORT SKIRTS

Walter K. Tanner, Jr., Chesnee; Frank A. Brinkmann, Spartanburg, both of S.C., and Terry W. Smith, N. Miami Beach, Fla., assignors to Draft Systems, Inc., Spartanburg, S.C.

Filed May 25, 1983, Ser. No. 496,501
Int. Cl.[3] B21D *1/08*
U.S. Cl. 72—10 20 Claims

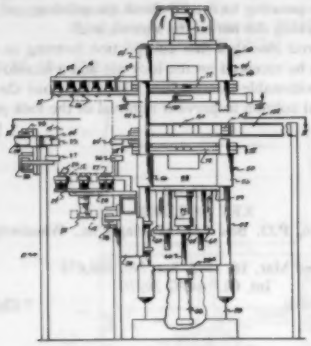
1. Apparatus for detecting and straightening bent skirt portions of generally cylindrical containers having depending circular metal end skirts normally extending generally parallel to the cylindrical axis of the containers comprising:

(a) sensing means positioned in a path of travel of a plurality of containers for detecting displacement of one or more portions of the end skirts of selected of the containers from the normal circular configuration of the skirts,

(b) means responsive to said sensing means for directing a container having a detected displaced skirt portion to a skirt-straightening station,

(c) means at said skirt-straightening station for holding the container and for applying a force to displaced portions of

the container skirts to move the same back into circular configuration, and



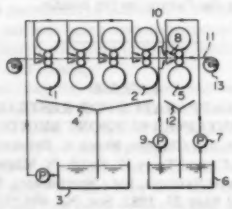
(d) means for directing the straightened container back into said path of travel for movement with said plurality of containers.

4,475,369

METHOD FOR PRODUCING CLEAN COLD STRIP

Yukio Matsuda, Ibaraki, and Tsutomu Ueno, Chiba, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Aug. 18, 1982, Ser. No. 409,106
Int. Cl.³ B21B *9/00, 45/08*
U.S. Cl. 72—38 2 Claims



1. A method for producing a clean cold strip, comprising the steps of:

injecting a rolling mill lubricant emulsion having a concentration of 0.5–2.0 percent to both sides of a strip at the last stand of a cold rolling mill at a pressure of 100–200 Kg/cm^2 and a flow rate of 20–150 l/min per 100 mm width of the strip, thereby removing stains such as oil or metal dust from the surface of the strip;

charging the cold strip as rolled into a box annealing furnace;

mixing a water steam supply with an atmospheric gas of the furnace consisting mainly of nitrogen and hydrogen; and

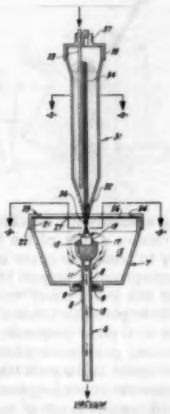
adjusting the dew point of the gas within the box annealing furnace to a temperature of 0–10° C.

4,475,370

DEVICE FOR TREATING DENTAL CASTINGS

Marvin M. Stark, Los Altos Hills; Kenneth B. Soelberg, Menlo Park; Roger B. Pelzner, San Mateo, and Mark S. Bogdan, Menlo Park, all of Calif., assignors to Marvin M. Stark Research Foundation, Santa Clara, Calif.

Filed May 16, 1983, Ser. No. 495,144
Int. Cl.³ B21J *51/28*
U.S. Cl. 72—53 5 Claims



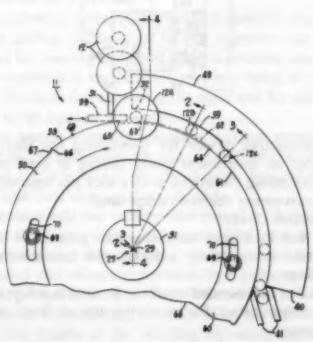
1. A device for treating the surface of a dental casting comprising a hollow stem, a dental casting holder disposed on one end of said stem and adapted to contain putty-like material, a cup on said stem and substantially encompassing said dental casting holder, a cover on said cup having a central opening therein substantially in axial alignment with and of a size to pass said dental casting holder axially therethrough, and means in said stem affording openings providing communication between the interior of said cup and the interior of said hollow stem for passing granular material from said cup through said openings into the interior of said stem.

4,475,371

TESTING AND STRAIGHTENING MACHINE

Ronald J. Matej, Parma Heights, Ohio, assignor to Litton Industrial Products, Inc., Cleveland, Ohio

Filed May 20, 1983, Ser. No. 496,517
Int. Cl.³ B21D *3/16*
U.S. Cl. 72—68 17 Claims



1. A combination testing and straightening machine for

elongated round cross-section workpieces having a breakable area therein, comprising, in combination:

a base;

straightening means; testing means; feed means; and movement means on said base;

said straightening means including an arcuate first dieholder fixed on said base;

a rotary second die holder journalled on said base on a first axis;

said first dieholder adapted to adjustably hold an arcuate first fixed die having an entrance end and an exit end;

said second dieholder adapted to hold a rotatable second die;

said feed means adapted to feed workpieces to the entrance end of the first fixed die;

said movement means including drive of said rotary second dieholder for rotary passage of such workpieces nominally in a first path of movement between first and second dies in accordance with rotation of said second dieholder;

said straightening means increasingly bending the workpieces until about the mid-point of the rotary passage and then decreasingly bending such workpieces as they approach the exit end of the first fixed die for the straightening of such workpieces;

said testing means including deflecting means operative on the workpieces near the breakable area thereof for only a short portion of said rotary passage near the first die entrance end,

said deflecting means including the holding of the workpieces by said dies and the rotary passage of the workpieces between the dies,

said deflecting means establishing a second path intersecting said first path in a first radial direction and then in a second opposite radial direction to engage and cyclically deflect the workpieces an amount sufficient to impart a bending stress thereto which will exceed the breaking point of defective breakable areas yet not exceed the breaking point of satisfactory breakable areas;

and said movement means including the rotation of said rotary dieholder to establish rotary passage of the workpieces prior to and subsequent to said testing by said testing means.

4,475,372

METHOD AND MEANS FOR REMOVING A DIE, SEALING MEMBER AND RESIDUAL METAL FROM AN INDIRECT EXTRUSION PRESS

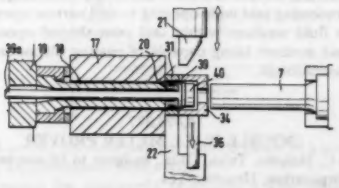
Günter Ostlinning, Düsseldorf; Otto A. Roever, Haan; Günther Wintzen, and Franz J. Zilges, both of Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to SMS Schloemann Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 10, 1982, Ser. No. 356,798

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110105

Int. Cl.³ B21C *35/00, 35/04*

U.S. Cl. 72—255 **11 Claims**



11. An indirect metal extrusion press comprising apparatus for severing and removing an unextruded butt end portion of a billet, said press comprising:

(a) a billet carrier for carrying the billet and a billet carrier holder for holding the billet carrier;

(b) shearing means, mounted on the billet carrier holder, for severing the butt end;

(c) holding means for holding at least said butt end and receiving the force of the shearing means, comprising:

(d) a first holding sleeve adapted to be fixedly clamped about an extruded portion of the billet and removed after unclamping by means of a pivotable removal arm, to which sleeve the support member is fixed; and

(e) a second holding sleeve removably clamped around said butt end and pivotably mounted on said removal arm of the first holding sleeve; so that the force of the shearing means is transmitted to the second holding sleeve severing the butt end from the extruded portion retained in the first holding sleeve and causing the second holding sleeve to pivot, the shearing force being transmitted through the pivoted mount of the second holding sleeve to the removal arm of the first holding sleeve and through it to the support member of the first holding sleeve; and

wherein the shearing force received by the holding means is transmitted to the billet carrier holder by:

(f) a bracket member mounted in the lower region of, and vertically coplanar with, the billet carrier holder;

(g) a support member on the holding means arranged to rest on said bracket member when said holding sleeve is ready to receive the force of said shearing means.

4,475,373

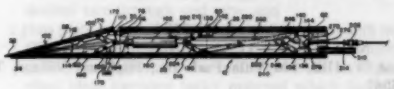
HYDRAULIC POWERED PIPE AND TUBING STRAIGHTENER

Maynard D. Ikenberry, Cottonwood Village, Quinter, Kans. 67752

Filed Mar. 18, 1982, Ser. No. 359,417

Int. Cl.³ B21D *3/14, 41/02*

U.S. Cl. 72—392 **15 Claims**



1. A pipe straightening tool comprising an elongated and horizontally extending unit that includes a lower segment having a lower external surface that is conformable to a downwardly convex cylindrical surface of a given diameter, said unit also including an upper segment parallel to and disposed directly above a rear portion of the lower segment and having an upper external surface that is conformable to an upwardly convex cylindrical surface of said diameter, means operatively connecting the upper segment to the lower segment for movement of the former between an elevated extended position and a depressed retracted position relative to the latter while maintaining such segments in parallelism to each other, a first means for urging movement of the upper segment toward its extended position, said upper and lower segments having an overall vertical extent that is less than said diameter when the former is in its retracted position, said unit also including an elongated nose segment directly overlying the forward portion of the lower segment and having a rear end pivotally connected to the front end of the upper segment for swinging movement thereof between a relatively raised position in which its upper external surface is conformable to the same upwardly convex surface as the upper segment and a relatively lowered position in which the nose section is inclined downwardly and forwardly from the forward end of the upper segment, a second means for urging movement of the nose segment from its lowered toward its raised position, and the nose segment and the portion of the lower segment disposed therebelow being tapered forwardly so that the forward end extremities of such segments are in relatively close proximity when the nose segment is in its lowered position.

4,475,374

SMALL PRESS

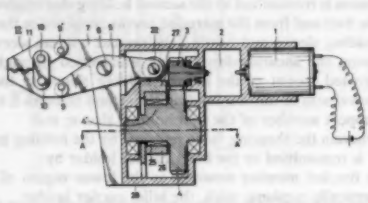
Yasuharu Sakai, Kyoto, and Kazuhiro Matsui, Aichi, both of Japan, assignors to Japan Storage Battery Limited and Proto Planning Co., both of, Japan

Filed Feb. 25, 1982, Ser. No. 352,436

Claims priority, application Japan, Feb. 27, 1981, 56-28961; Feb. 27, 1981, 56-28962; Feb. 27, 1981, 56-28963; Feb. 27, 1981, 56-28964; Feb. 27, 1981, 56-28965

Int. Cl.³ B21J *9/18*

U.S. Cl. 72—452 **5 Claims**



1. A small press comprising a casing, a stationary lever mounted on said casing, a rocking lever pivotally mounted on said stationary lever by means of a fulcrum shaft, said rocking lever having one end thereof disposed within said casing, complementary tool means carried by said stationary lever on the other end of said rocking lever for movement into and out of pressure engagement, drive means mounted in said casing including rotatable shaft means having cam means thereon, a slide plate disposed between said one end of said rocking lever and said cam means such that said slide plate is reciprocated linearly as said cam means is turned and a contact roll rotatably mounted on said one end of said rocking lever in contact with said slide plate.

4,475,375

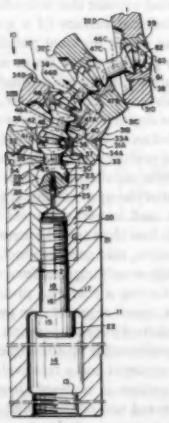
MULTI-FLEX TUBE BENDING MANDREL

Ernest W. Hill, 106 Villa Park Dr., Highland Village, Tex. 75067

Filed Jan. 24, 1983, Ser. No. 460,124

Int. Cl.³ B21D *9/03*

U.S. Cl. 72—466 **12 Claims**



1. A multi-flex tube draw bending mandrel having a flexible multiple ball ring segment section; comprising a plurality of ball ring segments in said flexible multiple ball ring segment section; a link member having two link pivot means ends interconnecting two adjacent ball ring segments of said plurality of ball ring segments; mount means for said flexible multiple ball ring segment section including link means having a link pivot means end like said two link pivot means ends of said link member; pivot interconnect means in at least one ball ring segment of said plurality of ball ring segments capturing link pivot means ends of two of said links for articulation of the respective ball ring segment with respect to both link pivot means ends captured in that ball ring segment; and wherein each segment of said plurality of ball ring segments comprises: a ball ring member having an outer annular surface curved from a forward face to a rear face; a cylindrical opening through said ball ring member; a split link retainer mounted in the cylindrical opening through said ball ring member; split link retainer mount holding means blocking movement of said split link retainer from the cylindrical opening through said ball ring member; said split link retainer being formed with two duplicate opposite side facing inner spherical segment surfaced cavities separated by an internally projecting annular ring; and a pivot ball, with a ball groove, held in place by projection of said internally projecting annular ring into said ball groove with said internally projecting annular ring and said ball groove so fitted as to hold them to substantially the same reference center.

4,475,376

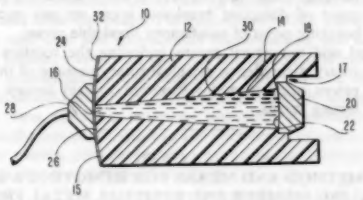
APPARATUS FOR TESTING ULTRASONIC TRANSDUCERS

George W. Keilman, Seattle, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Filed Dec. 1, 1982, Ser. No. 445,795

Int. Cl.³ G01N *29/00*; H04R *29/00*

U.S. Cl. 73—1 DV **12 Claims**



1. A probe for testing ultrasonic transducers comprising:

(a) a body of material having a cone-shaped cavity formed therein, said cone-shaped cavity having a wide opening adjacent one end of said body and a narrow opening adjacent the other end of said body;

(b) an ultrasound transducer having a spherical surface, said ultrasound transducer being mounted in the wider one of said openings and oriented to transmit, or receive, ultrasound waves toward, or from said narrow opening, said narrow opening being substantially at the apex of said spherical surface and the walls of said cone-shaped cavity connecting said wide opening to said narrow opening; and

(c) a fluid medium within said cone-shaped opening, said fluid medium being capable of passing ultrasound waves therethrough.

4,475,377

DOUBLE WALL METER PROVER

Joseph C. Halpine, Tulsa, Okla., assignor to Measurement R & D Corporation, Houston, Tex.

Filed Mar. 17, 1983, Ser. No. 476,030

Int. Cl.³ G01F *25/00*

U.S. Cl. 73—3 **9 Claims**

1. A metering apparatus comprising:

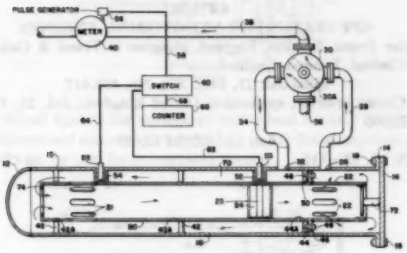
an elongated outer housing defining a closed interior surface;

a reduced diameter and length inner tubular barrel sup-

ported within the housing providing an annular area between the exterior of the barrel and the housing interior surface;

a first circumferential partition flange sealed at its outer periphery to the housing interior surface;

a second circumferential partition flange sealed at its inner periphery to the exterior surface of said barrel, said first and second partition flanges when engaged with each other forming an annular wall dividing said annulus area into two portions;



separate fluid ports in said housing communicating with each annular area portion;

a piston in said barrel freely moveable by fluid flow through the barrel;

first and second spaced apart detectors actuable by the passage of the piston as it moves in said barrel; and

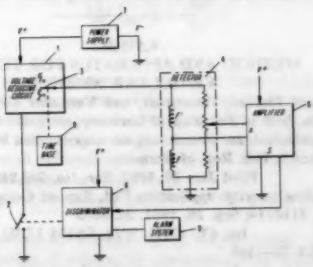
means of removably positioning said barrel within said housing and of sealably securing said first and second circumferential flanges to each other from said annular wall.

4,475,378

PROCESS FOR INTERROGATION OF A DETECTOR OF THE CONCENTRATION OF COMBUSTIBLE GAS AND AN IMPLEMENTING DEVICE

Maurice Boutonnat, Gouvieux, and Gerard Rose, Villers Saint Paul, both of France, assignors to CdF Chimie S.A., Bully-les-Mines, France

Filed Nov. 19, 1982, Ser. No. 443,108
Claims priority, application France, Nov. 20, 1981, 81 21733
Int. Cl.³ G01N *27/12*
U.S. Cl. 73—23 **12 Claims**



4. A device for detecting the concentration of a combustible gas in an atmosphere comprising:

(a) means for alternately producing a first voltage and a second voltage, wherein said first voltage is lower than said second voltage;

(b) means for detecting the concentration of said combustible gas in said atmosphere, wherein said detecting means is coupled with said producing means and emits a polarized unbalancing signal in response to said combustible gas and an applied voltage;

(c) means for comparing said polarized unbalancing signal with a predetermined minimum signal amplitude and a predetermined maximum signal amplitude; and

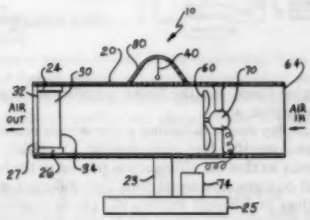
(d) means for stopping said first voltage from being further applied if said polarized unbalancing signal produced in response to said first voltage is not within a predetermined range and for stopping said second voltage from being applied to said detecting means if said polarized unbalancing signal produced in response to said first voltage is not within a predetermined range.

4,475,379

POLLEN COUNTER

Walter Jinotti, 10 Scott St., New Brunswick, N.J. 08902

Filed Sep. 22, 1982, Ser. No. 421,034
Int. Cl.³ G01N *1/24, 15/00*
U.S. Cl. 73—28 **5 Claims**



1. A pollen counter comprising

an open-ended hollow tube forming a path through which air can flow,

a fan disposed within said tube for causing air to flow at a desired rate through said tube, and

a glass plate mounted in said tube and disposed with its edges facing the open ends of said tube whereby air which flows through said tube deposits pollen grains on an edge of said glass plate carrying tacky material which faces the air flow, said fan forcing outside air through said tube and past said glass plate whereby pollen is deposited thereon.

4,475,380

FUEL EFFICIENCY MONITOR

Denny D. Colovas, Dearborn; David J. Rutkowski, Grosse Ile, and Wendell J. Ver Ploeg, West Bloomfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01122, § 371 Date Aug. 19, 1982, § 102(e) Date Aug. 19, 1982, PCT Pub. No. WO84/00814, PCT Pub. Date Mar. 1, 1984
PCT Filed Aug. 19, 1982, Ser. No. 432,891
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—114 **5 Claims**

2. a fuel efficiency monitor for a vehicle, especially a draft vehicle for agricultural use and having a driving engine, said monitor including:

a first sensor means for measuring an rpm related parameter of the driving engine;

a second sensor means for measuring a fuel usage related parameter of the driving engine;

an engine map means coupled to said first and second sensor means for correlating the rpm parameter and the fuel usage parameter to a fuel efficiency related parameter;

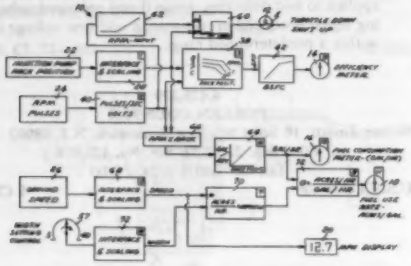
a display means coupled to said engine map means for giving an indication of the efficiency of operation of the vehicle engine;

said first sensor means including an engine rpm detection means to produce a train of pulses with a repetition rate related to the revolutions per minute of the engine and a

converter means having an output voltage level related to the input pulse repetition rate;

said second sensor means including a throttle position means for indicating the position of a driver operated accelerator pedal for the vehicle thereby determining the amount of fuel desired to be injected into the vehicle engine;

said engine map means including a stored correlation for the vehicle engine relating the accelerator pedal position, the



engine speed and the brake specific fuel consumption of the engine; and

said display means including a conversion means for relating brake specific fuel consumption to vehicle engine efficiency so that the efficiency is related to the brake specific fuel consumption by at least two different multiplication factors in different regions of vehicle operation, and said display means includes an indicator to convey vehicle efficiency information to the vehicle operator.

4,475,381

METHOD AND APPARATUS FOR DETECTING PNEUMATIC PRESSURE IN AN INTERNAL COMBUSTION ENGINE

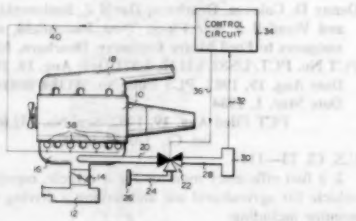
Takayoshi Nakatomi, and Keiji Aoki, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1981, Ser. No. 333,571

Claims priority, application Japan, Dec. 23, 1980, 55-181211

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—115 **8 Claims**



1. A method of detecting pneumatic pressure in an internal combustion engine having a single absolute pressure sensor for detecting the absolute pneumatic pressure of a fluid applied to the sensor, an intake passage, a throttle valve disposed on the intake passage, and a pressure detection port open to the intake passage at a position located downstream of the throttle valve, said method comprising the steps of:

detecting the absolute pneumatic pressure in the intake passage downstream of the throttle valve and the atmospheric pressure by selectively communicating said absolute pressure sensor to said pressure detection port of the intake passage or to the open air, said detection of the atmospheric pressure being executed only initially and when the engine is operated under a pedetermined operating condition, where the difference between the detected absolute pneumatic pressure and the detected atmospheric pressure is less than a predetermined value, after a predetermined period of time has elapsed since the previous detection of the atmospheric pressure and

calculating the relative pneumatic pressure in the intake passage downstream of the throttle valve from said detected absolute pneumatic pressure in the intake passage and from said atmospheric pressure.

4,475,382

APPARATUS FOR MONITORING ENGINES

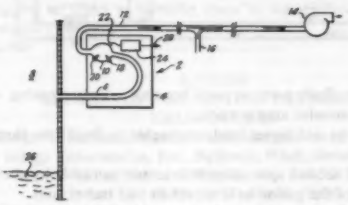
Peter Frank, London, England, assignor to Frank & Ockrent Limited, London, England

Filed Jul. 21, 1982, Ser. No. 400,417

Claims priority, application United Kingdom, Jul. 21, 1981, 8122360

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **10 Claims**



1. An oil mist detector for detecting the presence of an oil mist in an engine compartment, said detector comprising:

means defining a measuring chamber for receiving said oil mist;

first and second radiation source means for emitting radiation into said measuring chamber; and

radiation sensing means, said first radiation source means and said radiation sensing means being positioned in non-aligned relationship such that said radiation sensing means is operable to sense radiation emitted from said first radiation source means and reflected by oil mist in said measuring chamber, and said second radiation source means being arranged to direct radiation to said radiation sensing means irrespective of the presence of oil mist whereby the operation of said radiation sensing means can be tested.

4,475,383

METHOD AND APPARATUS FOR TESTING VEHICULAR WHEELS

Gerhard Fischer, Darmstadt, and Vatroslav Grubisic, Rheinheim, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,946

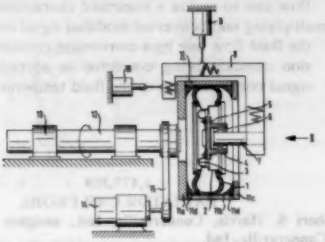
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114714; Sep. 28, 1981, 3138573

Int. Cl.³ G01L *5/16;* **G01M** *17/02*

U.S. Cl. 73—146 **18 Claims**

1. A device for testing vehicle wheels, wheel hubs, wheel bearings and wheel bolts under loading conditions resembling actual operation comprising a frame for holding the wheel to be tested on which a tire has been mounted, said frame including an axle upon which said wheel is rotatable, said axle having a normal position, wheel contact means surrounding said wheel for contact with a portion of the peripheral surface of said wheel through the tire mounted thereon, said wheel contact means being fixed to a rotatable shaft, and including

means for rotating said shaft, force-imposing means for deflecting said frame to change the normal position of the axle to load



said wheel against the surface of said wheel contact means a predetermined amount corresponding to the force imposed on said frame by said force-imposing means.

4,475,384

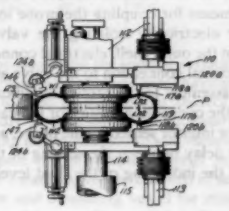
TIRE SIDEWALL DEFORMATION DETECTION TECHNIQUES

William C. Christie, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 339,990, Jan. 18, 1982, Pat. No. 4,440,018. This application Jul. 11, 1983, Ser. No. 512,591

Int. Cl.³ B60C *19/10*; G01B *5/28*

U.S. Cl. 73—146 **40 Claims**



1. In a tire manufacturing system including means for assembling and curing components of the tire and for testing the cured tire by detecting lateral runout values for at least one sidewall of the tire, improved apparatus for determining the degree of sidewall deformation resulting from the assembling and curing, said apparatus comprising:

storage means for storing a plurality of the lateral runout values;

processing means for segregating the lateral runout values into a plurality of groups, for generating with respect to each of the plurality of groups a group deformation value indicating the degree of deformation in the portion of the sidewall represented by one of the groups, and for generating a deformation flag signal if any of the group deformation values generated for the plurality of groups has a predetermined relationship with respect to a predetermined limit; and

means for indicating the condition of the tire in response to the deformation flag signal.

4,475,385

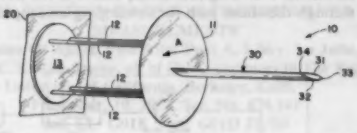
MODEL MOUNT SYSTEM FOR TESTING FLUTTER

Moses G. Farmer, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 31, 1983, Ser. No. 481,106

Int. Cl.³ G01M *9/00*

U.S. Cl. 73—147 **17 Claims**



1. A wind tunnel model mount system for testing flutter, comprising:

a wind tunnel with walls;

a rigid model;

flexible support means affixed to and extending from one of said wind tunnel walls for supporting said rigid model in an airstream and limiting the motion of said rigid model to pitch and plunge oscillations characteristic of flutter.

4,475,386

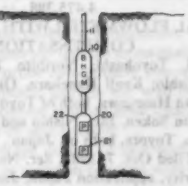
BOREHOLE GRAVIMETRY SYSTEM

John L. Fitch, Dallas, and W. D. Lyle, Roanoke, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,455

Int. Cl.³ E21B *47/06, 49/00*

U.S. Cl. 73—151 **9 Claims**



8. A borehole gravimetry system comprising:

(a) a logging cable,

(b) a borehole gravity meter affixed to said cable,

(c) a first pressure transducer affixed to said logging cable,

(d) a second pressure transducer affixed to said logging cable in spaced relation to said first pressure transducer, and

(e) means for moving said logging cable through the borehole and stopping at successive measurement locations within the borehole to permit the taking of gravity and borehole fluid pressure measurements.

4,475,387

HIGH TEMPERATURE MASS FLOWMETER

Charles E. Hawk, Newport News, and Jonathan T. Whitcomb, Hayes, both of Va., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Mar. 23, 1983, Ser. No. 477,878

Int. Cl.³ G01F *5/00, 1/68*

U.S. Cl. 73—202 **6 Claims**

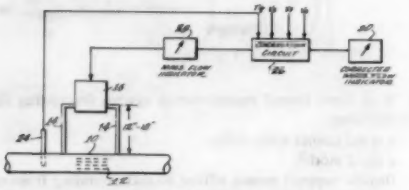
1. Apparatus for measuring fluid flow through a main supply line independently of static pressure variations therein, comprising:

(a) a restrictive element within the main line for developing a differential pressure thereacross, said element being

formed from a material which rapidly responds to changes in fluid temperature;

(b) a shunt path connected to the main line to divert fluid at the higher pressure side of the restrictive element and to return the fluid to said main line at the lower pressure side of the restrictive element, said restrictive element and the shunt path being of substantially the same diameter and length so as to divide flow in a constant branching ratio independently of static pressure variations;

(c) a thermal flowmeter connected in said shunt path, said flowmeter including means responsive to the flow of fluid through the shunt path for developing an output signal;



(d) means for thermally isolating said flowmeter from the main line whereby in the presence of fluid flow at an elevated temperature in said main line, the fluid flowing in said shunt path is reduced in temperature to substantially the ambient temperature of the flowmeter's surroundings;

(e) means for sensing the temperature of the fluid in said main line; and

(f) circuit means responsive to the sensed temperature and the thermal flowmeter output signal for providing an output representative of the actual fluid flow in said main line.

4,475,388

THERMAL FLOWMETER WITH TEMPERATURE COMPENSATION

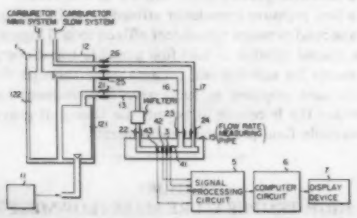
Hisasi Kawai, Toyokashi; Norihito Tokura, Aichi; Tokio Kohama, Nishio; Kenji Kanehara, Okazaki; Takayoshi Ito, and Kazutaka Hasegawa, both of Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 7, 1982, Ser. No. 433,411

Claims priority, application Japan, Jan. 11, 1982, 57-1702

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **5 Claims**



1. A method for measuring the flow rate of fluid comprising the steps of:

producing a signal corresponding to the fluid flow rate by using the voltages across first and second temperature-dependent resistors and the current through an electric heater arranged in a fluid flow rate measuring pipe;

producing a signal corresponding to the fluid temperature by using the voltage across a third temperature-dependent resistor arranged in said fluid flow rate measuring pipe;

modifying said produced signal corresponding to the fluid flow rate in accordance with said signal corresponding to the fluid temperature;

converting said modified signal corresponding to the fluid flow rate to realize a linearized characteristic; and

multiplying said converted modified signal corresponding to the fluid flow rate by a conversion constant, said conversion constant being corrected in accordance with the signal corresponding to the fluid temperature.

4,475,389

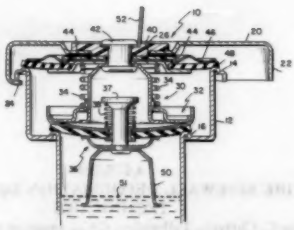
RADIATOR CAP PROBE

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed Aug. 23, 1982, Ser. No. 410,505

Int. Cl.³ G01F *23/10*

U.S. Cl. 73—304 R **4 Claims**



1. A cap for a radiator having an interior for containing a fluid, comprising an outer shell, an electrically conductive valve assembly, mechanical connecting means for connecting the valve assembly to the outer shell, an electrically conductive probe projecting into the radiator interior for sensing a fluid level in the radiator interior, electrically conductive coupling means for coupling the probe to the valve assembly, means for electrically isolating the valve assembly and the probe from the outer shell, electrical connecting means providing an electrical connection to the valve assembly and through the valve assembly to the probe, an indicator electrically connected to the connection means for indicating the fluid level in the radiator interior sensed by the probe, and means for providing a time delay between the sensing of the fluid level by the probe and the indicating of the fluid level by the indicator.

4,475,390

SMOKE DETECTOR

Andreas Scheidweiler, Uerikon, Switzerland, assignor to Cerberus AG, Männedorf, Switzerland

Continuation-in-part of Ser. No. 257,784, Apr. 27, 1981, Pat. No. 4,384,488. This application Mar. 21, 1983, Ser. No. 476,996

Claims priority, application Switzerland, May 9, 1980, 3641/80

The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.

Int. Cl.³ G01D *11/24*

U.S. Cl. 73—431 **9 Claims**

1. A smoke detector comprising:

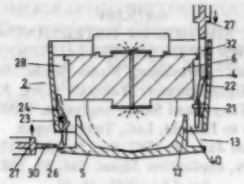
a housing enclosing at least one smoke measuring chamber;

said housing being provided with at least one opening for the entry of ambient air into the smoke measuring chamber;

said housing comprising a sleeve member and a cover member defining therebetween said air entry opening;

manually adjustable means for changing the air entry open-

ing in order to accommodate the smoke detector to different ambient atmospheric conditions; and



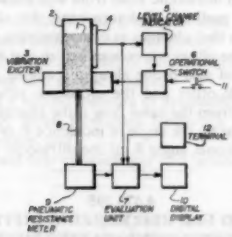
said manually adjustable means including a hood ring member displaceably supported by said sleeve member.

4,475,391

METHOD FOR MEASURING THE SPECIFIC SURFACE OF PULVERIZED MATERIALS AND APPARATUS FOR PERFORMING THE SAME

Milan Zavadil, Brno, Czechoslovakia, assignor to Vyzkumny ustav stavebnich hmot, Brno, Czechoslovakia

Filed Aug. 6, 1982, Ser. No. 405,929
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—432 PS **5 Claims**



1. An apparatus for measuring the specific surface of pulverized materials comprising a measuring vessel having a pressure air intake opening formed in the bottom thereof, vibration exciting means rigidly connected to said measuring vessel, sample volume sensing means coupled to said measuring vessel for sensing the volume of the sample material held therein, pneumatic resistance measuring means coupled to said pressure air intake opening in said measuring vessel for measuring the pneumatic resistance of the sample material, and an evaluation unit having a first input coupled to said pneumatic resistance measuring means for receiving the value of pneumatic resistance, a second input coupled to a terminal means for inputting the mass density factor of the sample material and a third input coupled to said sample volume sensing means for receiving the volume of the sample material, said evaluation unit providing at an output thereof the specific surface of the sample material in accordance with the equation:

$$P = \frac{k \cdot \sqrt{\epsilon^3} \cdot \sqrt{t}}{\gamma \cdot (1 - \epsilon)}$$

where:
P is the specific surface,
k is an instrument constant,
t is the pneumatic resistance, the measured time interval for the passage of a constant pressure air volume through the sample,
γ is the sample mass density, and
ϵ is given by the equation:

$$\epsilon = 1 - \frac{Q}{V \cdot \gamma}$$

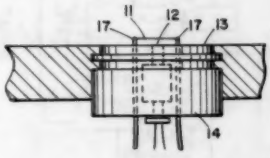
where:
Q is the mass of the sample, and
V is the volume of the sample.

4,475,392

SKIN FRICTION GAGE FOR TIME-RESOLVED MEASUREMENTS

Christopher O. Ajagu, Palo Alto; Paul A. Libby, La Jolla, and John C. LaRue, Irvine, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 10, 1983, Ser. No. 474,141
Int. Cl.³ G01K *3/00*; G01D *21/00*
U.S. Cl. 73—432 R **53 Claims**



1. A method of determining time-resolved measurements of skin-friction in turbulent fluid flow, said method comprising the steps of:
forming a composite gage by mounting a film probe and a wire probe on a smooth surface of an electrically insulated plug of low thermal conductivity, said film probe being flush with said surface, said wire probe being positioned slightly above said surface but within the thermal field of influence of said film;
connecting each said probe in a respective bridge circuit having means connected thereto to maintain the temperature of each said probe substantially constant;
mounting said composite gage in the wall of a calibration channel having known laminar flow characteristics and controlled values of skin-friction;
determining the voltage output of said wire probe bridge circuit necessary to maintain constant wire probe temperature;
relating said voltage output to known values of skin-friction in said laminar flow channel;
determining from the laminar flow information the constants A and B in the equation

$$E^2 = [A + B\tau_w^{\frac{1}{3}}][T_s - T_\infty]$$

where E is the bridge output voltage,
τ_w is the shear stress or skin-friction at the wall,
T_s is the probe temperature, and
T_∞ is the temperature of the flowing fluid;
entering the values of said constants A and B in computation and memory means, together with algorithms necessary to relate bridge output voltage E and $\Delta T(T_s - T_\infty)$ and the values of said constants to shear stress according to the relationship

$$\tau_w = \frac{1}{B^3}\left[\frac{E^2}{T_s - T_\infty} - A\right]^3;$$

removing said gage from said calibration channel;
mounting said gage in a wall to be tested with said surface flush with the wall surface of interest;
providing indicating means connected to the output of said

computation and memory means to indicate instantaneous shear stress at the wall under test in turbulent flow;

providing turbulent fluid flow over the wall surface to be tested; and

measuring values of skin-friction with said calibrated gage.

4,475,393

METHOD AND DEVICE FOR POSITIONING WORKPIECES TO BE BALANCED

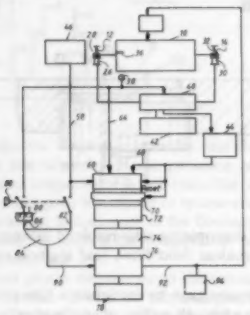
Wolf-Dieter Reutlinger, Novalisstrasse 5, D-6100 Darmstadt, Fed. Rep. of Germany

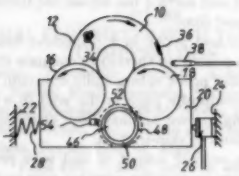
Filed Feb. 4, 1983, Ser. No. 464,017

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3204016

Int. Cl.³ G01M *1/08*

U.S. Cl. 73—462 **16 Claims**





1. Method for positioning workpieces to be balanced such that the unbalance (**34**) measured by means of an unbalance measuring machine having a rotatable element (**18**) frictionally coupled with said workpiece assumes a predetermined position, wherein

(a) a reference signal (**62**) is generated with each revolution of the workpiece (**10, 114**), when the workpiece (**10, 114**) assumes a particular, predetermined angular position,

characterized in that

(b) during the measuring run on the unbalance measuring machine, an unbalance position signal (**66**) is generated with each revolution of the workpiece (**10, 114**) from an unbalance measuring signal, said unbalance position signal having a fixed, predetermined phase relation with the unbalance measuring signal,

(c) with each revolution of the rotatable element (**18**) a sequence of angle increment signals synchronized therewith is generated, each one of which corresponds to a fixed angle increment of the rotatable element (**18**),

(d) during the measuring run, these angle increment signals (**56**) are counted from the reference signal (**62**) to the unbalance position signal (**66**) and the number thereof is stored, and

(e) for the subsequent positioning, the workpiece (**10, 114**) is rotated in the direction of rotation of the measuring run starting from a predetermined angular position through an angle which is a function of the stored number of angle increment signals (**70**).

4,475,394

ULTRASONIC METHOD OF DETERMINING NATURE OF FLAWS BY INCREMENTAL SCANNING

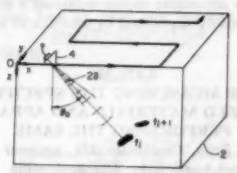
Hiroyuki Takeda, Hiroshima; Kunio Kudo, Sendai; Izumi Kobayashi, Higashikurume; Yohsuke Ojiri, Kasugai; Mitsuyuki Oda, Tokyo, and Sakae Sugiyama, Tohkai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1982, Ser. No. 340,718

Claims priority, application Japan, Jan. 19, 1981, 56-6317

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—598 **18 Claims**



1. In ultrasonic flaw inspection for determining the size of a flaw by emitting an ultrasonic wave to a subject via a probe and receiving an ultrasonic echo from said existing flaw inside said subject, a method of determining the ultrasonic echo characterized in that changes in characteristics of signals corresponding to the ultrasonic echoes before and after incremental movements of said probe along a scanning path are compared with each other and the ultrasonic echoes are determined to result from the same flaw if the changes fall within a range determined by the angle of incidence θ, of the ultrasonic wave and directional angle δ, of the ultrasonic wave.

4,475,395

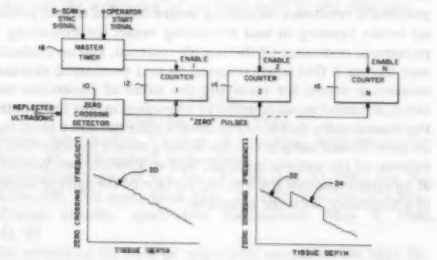
METHOD FOR RECOGNIZING DIFFERENT FREQUENCY DEPENDENT SCATTER MECHANISMS IN NON-HOMOGENEOUS TISSUES

Stephen W. Flax, Waukesha, Wis., assignor to General Electric Company, Rancho Cordova, N.Y.

Filed Jul. 16, 1982, Ser. No. 398,816

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—599 **4 Claims**

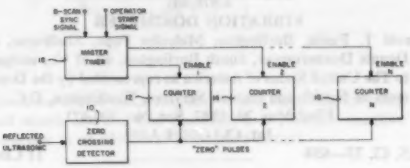


1. A method of determining the frequency dependence of scatter within a biologic tissue comprising the steps of transmitting a plurality of ultrasonic waves into said tissue, receiving reflected ultrasonic waves from the tissue, detecting the frequencies of said reflected ultrasonic waves from various depths in said tissue, detecting shifts in said frequencies that are larger than can be accounted for via statistical variations and attenuation alone, and determining the frequency dependence of scatter based on said shift.

4,475,396
METHOD OF DETERMINING ULTRASONIC ATTENUATION OF TISSUE USING REFLECTIVE TOMOGRAPHIC RECONSTRUCTION

Stephen W. Flax, and Gary H. Glover, both of Waukesha, Wis., assignors to General Electric Company, Rancho Cordova

Filed Jul. 16, 1982, Ser. No. 398,817
Int. Cl.³ G01N 29/04
U.S. Cl. 73—599 **3 Claims**



1. A method of determining ultrasonic wave attenuation of tissue comprising the steps of

directing an ultrasonic wave along a first vector through a limited volume of tissue,

detecting the frequency shift of a reflection of said ultrasonic wave along said first vector,

determining a first measure of attenuation of said limited volume of tissue from said detected frequency shift along said first vector,

directing an ultrasonic wave along at least a second vector through said limited volume of tissue,

detecting the frequency shift of a reflection of said ultrasonic wave along said second vector,

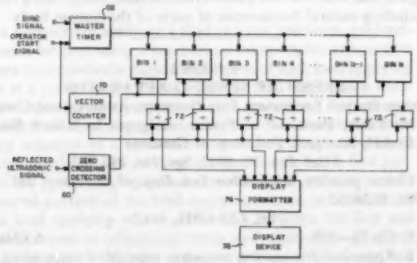
determining a second measure of attenuation of said limited volume of tissue from said frequency shift along said second vector, and

averaging said first measure and said second measure.

4,475,397
METHOD AND MEANS FOR ATTAINING ULTRASONIC ATTENUATION BY VECTOR SAMPLE AVERAGING

James K. Riley, Shingle Springs, Calif., and Stephen W. Flax, Waukesha, Wis., assignors to General Electric Company, Rancho Cordova, Calif.

Filed Jul. 19, 1982, Ser. No. 399,845
Int. Cl.³ G01N 29/04
U.S. Cl. 73—599 **8 Claims**



1. A method of determining ultrasonic wave attenuation of tissue comprising the steps of

transmitting a plurality of ultrasonic waves into said tissue along a plurality of vectors,

receiving reflected ultrasonic waves from the tissue,

detecting and counting zero crossings of said reflected ultrasonic waves as reflected from various depths in said tissue,

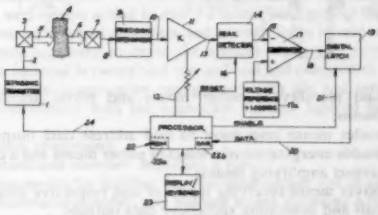
averaging said zero crossings from said reflected waves reflected from the same depths in said tissue along said vectors, and

determining tissue attenuation from the averaged zero crossings from said vectors.

4,475,398
SUCCESSIVE APPROXIMATION ENVELOPE DETECTION FOR ESTIMATING THE AMPLITUDE OF A PLURALITY OF SUCCESSIVELY OCCURRING ELECTRICAL PULSES

David J. Tjornehoj, Longmont; Donald E. Dick, Boulder; Richard E. Kiefer, Boulder, and Fred L. Smith, III, Boulder, all of Colo., assignors to Armco Inc., Middletown, Ohio

Filed Oct. 8, 1982, Ser. No. 433,551
Int. Cl.³ G01N 29/02
U.S. Cl. 73—599 **20 Claims**



18. In a system for measuring the size of particles in a fluid slurry stream of the type measuring the attenuation of RF pulses passing through the slurry comprising an ultrasonic transmitter for producing RF pulses of predetermined amplitude, a transmitting transducer responsive to said transmitter adjacent one surface of the slurry stream, and a receiving transducer adjacent the opposite surface of the slurry stream for receiving pulses passing through the slurry, the improvement in combination therewith comprising means for measuring the amplitude of the envelope produced by N successively occurring received pulses including:

an amplifier having a variable gain established by a control signal responsive to said received pulses;

peak detector means connected to the output of said amplifier for establishing the peak amplitude of each pulse; means establishing a DC reference voltage;

voltage comparator means responsive to said peak detector for comparing the peak amplitude of each pulse with said reference voltage; and

digital processor means responsive to said comparator for producing said control signal, including a storage register having a capacity of N bits, each of said bits corresponding to one of said N received pulses, means for setting or resetting each of said bits in turn dependent on whether the peak amplitude output from said peak detector for the corresponding received pulse is greater or less than said reference voltage; and means for using the contents of said register to generate said control voltage, such that the gain of said amplifier is adjusted in decreasing increments with successively occurring received pulses, the value of the contents of said register being representative of the amplitude of said envelope.

4,475,399
APPARATUS FOR ULTRASONIC TESTING OF TUBULAR GOODS

Waylon A. Livingston, 2534 Hollywood, Norman, Okla. 73069

Filed Aug. 11, 1982, Ser. No. 407,137
Int. Cl.³ G01N 29/04
U.S. Cl. 73—622 **14 Claims**

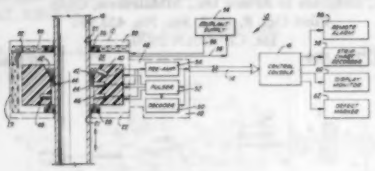
1. An ultrasonic testing system for tubular goods, comprising:

a plurality of ultrasonic transducers disposed in at least one circumferential array for energy-coupled disposition concentric to said tubular goods;

a plurality of pulser means for pulsing a selected at least one of said transducers in a predetermined serial order and receiving respected flaw-induced return signal outputs;

plural amplifying means that are enabled serially to receive input of said return signal outputs to generate respective data signals;

sequence controller means responsive to stored program and generating an address data output for sequence control of



said plurality of pulser means and plural amplifying means;

decoder means responsive to said address data output to enable energization of a selected pulser means and a counterpart amplifying means;

receiver means receiving inputs of said respective data signals and generating successive data outputs;

gate means receiving inputs of said data outputs to provide peak detected output signals having amplitudes proportional to a defect magnitude; and

means responsive to said peak detected output signals to indicate defects in said tubular goods.

4,475,400

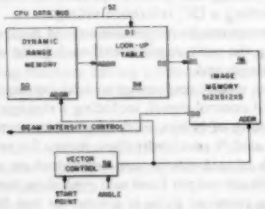
METHOD AND MEANS FOR IMPROVING IMAGE IN AN ULTRASONIC SCANNING SYSTEM

Stephen W. Flax, Waukesha, Wis., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Jul. 16, 1982, Ser. No. 398,818

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—631 **8 Claims**



1. An ultrasonic scanning system comprising

transducer means for directing an ultrasonic beam into a body and generating electrical signals in response to reflections of said ultrasonic beam from said body,

amplifier means for amplifying said electrical signals in accordance with a time gain control signal,

analog to digital conversion means operably connected with said amplifier means for converting the amplified electrical signals to digital form,

a dynamic range memory for storing transducer dynamic range compensation values for said amplified electrical signals in accordance with depth in said body of said reflections,

a look-up table of beam intensity control values, said look-up table having address means interconnected to receive values from said dynamic range memory and the digital form of the amplified electrical signals,

an image memory for storing beam intensity values,

means connecting the output of said look-up table to the input of said image memory,

vector control means for addressing said image memory, and

a video display operably connected to receive beam intensity control signals from said image memory.

4,475,401

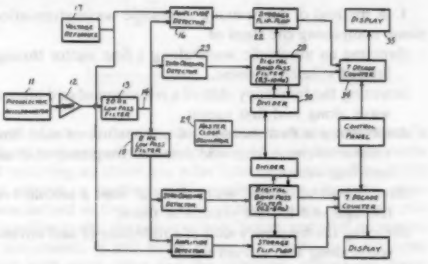
VIBRATION DOSIMETER

David T. Punia, Burlington; Malcolm Pope, Shelburne, and Dennis Donnermeyer, South Burlington, all of Vt., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed May 20, 1982, Ser. No. 380,471

Int. Cl.³ G01H *1/00*

U.S. Cl. 73—658 **11 Claims**



1. A vibration dosimeter apparatus comprising vibration-sensing transducer means providing an electrical analog signal responsive to environmental vibrations, amplitude-detector means to compare the amplitude of said analog signal with a selected reference amplitude to obtain a comparison signal, digital counter means, means to generate output signal pulses representing selected zero crossings of said analog signal, means to apply said output signal pulses to said counter means, means to inhibit said counter means from incrementing the output signal pulses unless said comparison signal rises above a predetermined voltage reference value, digital data read-out means operatively connected to the output of said counter means, means to filter said analog signal to remove frequencies above a predetermined band, whereby to derive a resultant filtered analog signal from which to obtain the comparison signal, and wherein said predetermined band comprises a range including natural frequencies of parts of the human body.

4,475,402

PRESSURE SENSING APPARATUS

Rainer Burkel, Lechesnay; Jean Denamps, Asnières, and Cornelius Peter, Paris, all of France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,782

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128032

Int. Cl.³ G01L *9/12*

U.S. Cl. 73—724 **6 Claims**

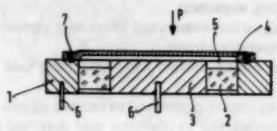
1. Apparatus for sensing pressure, capable of responding to changes of intake air pressure of an internal combustion engine and comprising:

a metallic membrane (4) formed of an etched metal platelet to provide an attachment rim for said membrane slightly and uniformly in front of the peripheral portion of said membrane;

a metal ring (1), to a flat surface of which said rim of said membrane is joined by metal-to-metal fusion in an airtight, pressure-resistant and electrically conductive manner;

an electrode (3) located centrally in said metal ring bonded

to said metal ring by a single pressure-tight fused glass seal, insulated from said metal ring and said membrane, and having a surface coplanar with said flat surface of said metal ring, and



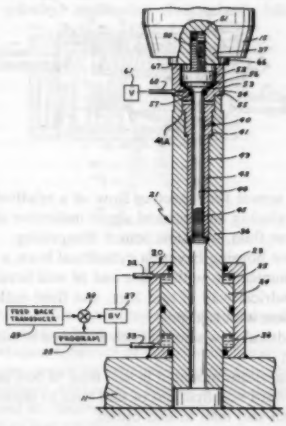
connections to said metal ring and to said electrode for using said membrane and said electrode as a pressure-sensitive capacitor in an electrical evaluation circuit.

4,475,403

DEVICE TO PRELOAD LOADING CONNECTIONS

Thomas P. Lentz, Chanhassen, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed Jun. 17, 1982, Ser. No. 389,420
Int. Cl.³ G01N *3/10*
U.S. Cl. 73—798 **14 Claims**



1. In a device for applying a load to a test specimen, preloading means for providing a mechanical compressive connection between two relatively movable portions of such load applying means at a compression loading greater than any tension loading between the two portions during testing of a specimen, including load applying means adapted to be coupled from a loading actuator to a specimen and having first and second portions, an elastic link having one end coupled to a first portion of the load applying means, and the other end coupled to the second portion of the load applying means, means carried by the load applying means and acting between the first and second portions to selectively stress said elastic link to a first stress level greater than the stress occurring in said elastic link between the first and second portions when the load applying means has reached its maximum load, the first and second portions separating when the means to stress the elastic link is at the first stress level, means to engage said first and second portions and adapted to carry compression loads between the first and second portions when the means to selectively stress the elastic link is at the first stress level, the means to selectively stress being thereafter releasable whereby the stress in the elastic link loads the second portion mechanically against the first portion.

4,475,404

PULL TESTER

Woodrow T. Rutledge, Jr.; Russell P. Rutledge, and John E. Freeman, all of Big Spring, Tex., assignors to Fiberflex Products, Inc., Big Spring, Tex.

Filed Aug. 23, 1982, Ser. No. 409,253
Int. Cl.³ G01N *3/10*
U.S. Cl. 73—827 **1 Claim**

1. A test system for pull testing the tensile strength of fiberglass sucker rods and end connectors adhesively connected thereto, said system acting to apply a tensile load greater than that expected in actual operation, and a tensile force to said end connectors necessary to cause the annular wedges of cured adhesive material between said rod and said end connectors to be forced into compressive engagement with the rod outer cylindrical surface with the connector member tapered surfaces,

said system comprising:

a containment member, including a base;

holding means for holding the fiberglass sucker rod in said containment member, said holding means including a first member fixed to said containment member and a second member movable relative to said containment member; and

movement means for moving said second member away from said first member, said movement means including

a first plate fixed to said containment member;

a second plate movable relative to said containment member;

force means for forcing said second plate away from said first plate;

connection means for connecting said second plate with said second member;

means for measuring the tensile pressure caused by said force means;

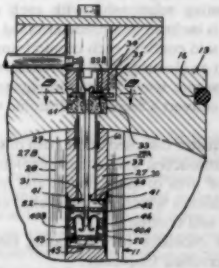
means for switching said force pressure to the off position when said second plate has moved a predetermined distance.

4,475,405

DIFFERENTIAL PRESSURE VORTEX SENSOR

Gary P. Corpron, Chanhassen, and Roy E. Pagel, Richfield, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Mar. 12, 1982, Ser. No. 357,472
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.24 **16 Claims**



1. A vortex flowmeter having a body forming a housing, the body having first and second surfaces which are subjected to

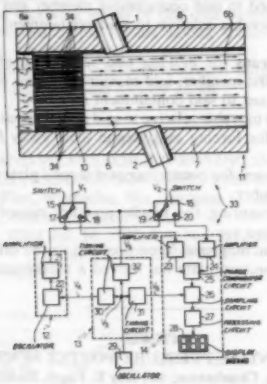
pressure differentials representative of flow, separate diaphragm means positioned on the body and facing in the directions of said first and second surfaces respectively, for deflecting in response to pressure differentials at the first and second surfaces, fluidly isolated bore means defined in part by the separate diaphragm means, means in said bore means for transmitting deflecting motion of the separate diaphragm means caused by differentials in pressure on the separate diaphragm means comprising a tubular member having end faces engaging the respective separate diaphragm means and carrying compression loads between the diaphragm means, a beam member positioned in said bore means and extending laterally from the tubular member and having one end mounted with respect to said body at a location spaced from the means for transmitting deflecting motion, an opposite end of said beam member being coupled to the tubular member to thereby bend said beam member responsive to the movement of the tubular member as the separate diaphragm means deflect.

4,475,406

ULTRASONIC DEVICE FOR THE MEASUREMENT OF THE DELIVERY OF A FLUID IN A CONDUIT

Ermanno Ansaldi, and Stefano Re Fiorentin, both of Turin, Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Jul. 8, 1982, Ser. No. 396,328
Claims priority, application Italy, Jul. 10, 1981, 67961 A/81
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.29 **4 Claims**



1. A device for measuring the delivery of a fluid in a conduit comprising:

(a) first and second electroacoustic transducers arranged in the wall of a pipe forming said conduit and disposed in a confronting relationshp with each other along an axis which is inclined at a predetermined angle relative to the axis of said conduit, each of said transducers being able to convert an electric signal of predetermined frequency into an ultrasonic wave which propagates through said fluid and to convert a received ultrasonic wave into an electric signal;

(b) a collimator disposed in the path of said fluid upstream of said transducers, extending completely across the cross-sectional area of said conduit and forming a plurality of throughholes which are parallel to each other and to the axis of said conduit;

(c) a first oscillator for generating electric signals of said predetermined frequency;

(d) a phase comparator circuit for detecting the phase difference between the ultrasonic signals received by said respective transducers;

(e) first and second switching means for operatively coupling said first and second transducers, respectively, to said first oscillator and to said phase comparator circuit;

(f) a first timing circuit for controlling said switching means such that both of said transducers are coupled first to said first oscillator and second to said phase comparator circuit in alternating sequence;

(g) a sampling circuit connected to receive signals from said phase comparator circuit;

(h) a second timing circuit for controlling said sampling circuit;

(i) a processing circuit connected to receive signals from said sampling circuit and to correlate said detected phase difference with the delivery of fluid in said conduit; and

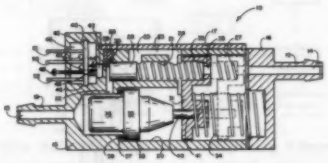
(j) a display means for displaying symbols in response to electric signals received from said processing circuit.

4,475,407

TEMPERATURE COMPENSATED FLOW SENSOR

Francis E. Kruncos, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 27, 1982, Ser. No. 453,449
Int. Cl.³ G01F *1/24*
U.S. Cl. 73—861.53 **9 Claims**



1. A flow sensor for detecting flow of a relatively viscous fluid and producing an electrical signal indicative of the flow of said viscous fluid, said flow sensor comprising:

(A) a sensor housing having a cylindrical bore, a fluid inlet in communication with a first end of said bore, a port in the cylindrical wall of said bore, and fluid outlet in communication with said port;

(B) a cylindrical flow sensing body mounted in said cylindrical bore;

(C) a spring means mounted in said bore to bias said sensing body toward said first end of said bore to normally block flow from said inlet to said outlet;

(D) a position sensing means mounted in said sensor housing to detect the position of said flow sensing body; and

(E) a compensating means to reduce the biasing force provided by said spring means as the temperature of the fluid flowing through said sensor increases.

4,475,408

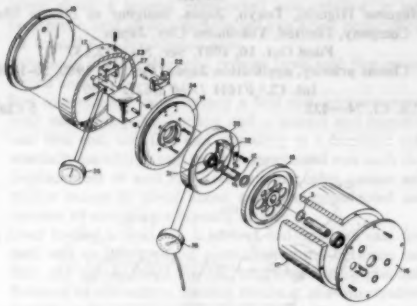
TORQUE MEASURING DEVICE

Douglas Browning, Sykesville, Md., assignor to Baltimore Therapeutic Equipment Company, Baltimore, Md.

Filed Jun. 29, 1982, Ser. No. 393,242
Int. Cl.³ G01L *3/16*
U.S. Cl. 73—862.12 **3 Claims**

1. A torque measuring device for measuring the rotational force applied to a shaft comprising a rotatable disc mounted on said shaft adjacent electric friction brake means adapted to engage and restrain rotation of said disc and shaft when an electric current is applied from externally selective means for varying voltage applied to said brake means to magnetize it, said shaft being disposed so as to otherwise rotate freely within

said brake means and said brake means being attached to load cell means for measuring and registering the rotational force



applied thereto in response to rotational force applied to said shaft.

4,475,409

TRANSDUCER FOR DYNAMOMETER

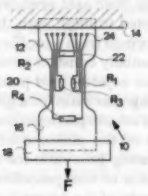
Hans-Rudolf Zulliger, Uetikon, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Sep. 27, 1982, Ser. No. 423,615

Claims priority, application Switzerland, Mar. 25, 1982, 1831/82

Int. Cl.³ G01L *1/22*

U.S. Cl. 73—862.65 **9 Claims**



1. Transducer for furnishing an electrical signal varying as a function of applied load, comprising

a band-shaped substrate of amorphous metal; and

at least one sensor on said substrate for furnishing said electrical signal, said sensor having a load-dependent expansion and an electrical characteristic varying in correspondence to said expansion.

4,475,410

SAMPLER FOR VISCOUS MATERIALS

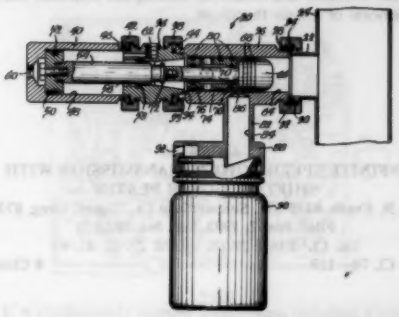
Ben E. Jaeger, Rte. 2 Box 49, Plano, Ill. 60545

Filed Nov. 26, 1982, Ser. No. 444,719

Int. Cl.³ G01N *1/10, 1/20*

U.S. Cl. 73—863.84 **11 Claims**

1. Apparatus for obtaining samples of a liquid product from a vessel containing the product, comprising a housing having a bore for communication at a forward end with the interior of the vessel, said bore being cylindrical and having a rearward portion of one diameter and a forward portion of increased diameter toward and at said forward end; a plunger in said bore and reciprocable therein; a slider in said bore rearwardly of said plunger and reciprocable therein; seal means on said plunger and slider for sealing the same with said bore rearward portion; means for reciprocating said plunger and slider in said bore to move the same forwardly to positions whereat said plunger moves completely out of said rearward and into said forward portion of said bore and extends only partially through said forward end into the vessel and said slider is completely in said rearward portion and spaced from said forward portion of said bore and from said plunger to establish a samplle chamber therebetween for reception of product flowing from the vessel and around said plunger in said increased diameter bore forward portion, and to then move said plunger and slider rearwardly into said bore rearward portion to capture the product in said sample chamber until said sample chamber is at a point in said bore rearward portion; means at said point in said bore rearward portion for receiving said



sampled product; means for resisting further rearward movement of said slider when said sample chamber is at said point in said bore rearward portion, so that continued rearward movement of said plunger then decreases the volumetric capacity of said sample chamber and forces the product therefrom for reception by said means for receiving, said seal means maintaining a liquid seal between said forward end of said bore and said point therein.

4,475,411

SAMPLING APPARATUS

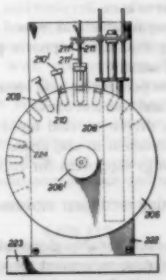
Hans Wellerfors, Hägersten, Sweden, assignor to Coulter Electronics Limited, Luton, England

Filed Mar. 18, 1982, Ser. No. 359,565

Claims priority, application Sweden, Mar. 20, 1981, 8101788

Int. Cl.³ G01N *35/02*

U.S. Cl. 73—864.24 **12 Claims**



1. Apparatus for taking a sample of liquid from each of a plurality of sealed containers each having pierceable closures, comprising a carrier, container receiving means in said carrier for receiving and holding a plurality of said sealed containers, means on the apparatus for supporting said carrier for rotation about the central axis thereof in a plane generally normal thereto and drive means for said carrier to cause the containers held thereby to follow a defined path to a sampling station disposed along the path and each container being inverted at least once during its movement along said path with movement of the carrier whereby to cause agitation of liquid in the con-

tainers, sampling means disposed at the sampling station, means for arresting a container at the sampling station with respect to said sampling means, and means for actuating said sampling means to effect withdrawal of a sample from the container, said sampling means including piercing needle means arranged at said sampling station for selective operation to pierce the closure of the sealed container when the container is stopped at the sampling station whereby to advance said needle means into the container and means for holding the container during withdrawal of sample therefrom.

4,475,412

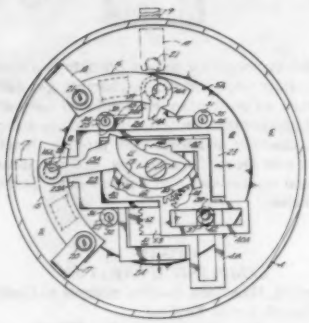
INFINITE SPEED POWER TRANSMISSION WITH SHIFTABLE GEAR PLATES

Lyle B. Evans, 9135 SW. Summerfield Ct., Tigard, Oreg. 97223

Filed Jun. 7, 1983, Ser. No. 501,870

Int. Cl.³ F16H *29/08, 29/20, 27/02, 21/40*

U.S. Cl. 74—119 **8 Claims**



1. A transmission comprising in combination,

a case,

input and output shafts,

arms pivotally mounted in said case for oscillation about spaced apart arm axes,

arm supports, positionable within said case,

means mounting said arm supports permitting rotational positioning of same,

control means for positioning said mounting means and said arm supports and the arm axes,

eccentric means driven by said input shaft and imparting oscillatory movement to said arms,

gear plate housings supported for rectilinear travel within said case,

said arms imparting rectilinear movement to said gear plate housings,

gear plates one each slidably disposed within a gear plate housing for relative movement thereto, each of said gear plates having multiple sets of rack gear teeth for engagement with an output shaft mounted pinion,

cam means acting on said gear plates to shift same within their respective housings so as to locate a set of sets of rack gear teeth thereon for enmeshing travel past said pinion to drive the output shaft, and

speed changes between said input and output shafts occurring as the magnitude of gear plate housing travel is altered by the relocating of the arm axes toward or away from the gear plate housings to vary effective arm throw by changing the point of contact between said arms and their respective gear plate housings.

4,475,413

VARIABLE RATIO RACK AND PINION STEERING GEAR

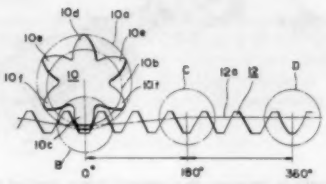
Megumu Higuchi, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 16, 1981, Ser. No. 312,137

Claims priority, application Japan, Oct. 16, 1980, 55-143689

Int. Cl.³ F16H *1/04;* **B62D** *1/20*

U.S. Cl. 74—422 **5 Claims**



3. A variable ratio rack and pinion steering gear comprising:

a circular driving pinion having a plurality of teeth, an axis of rotation, and an addendum circle concentric with said axis of rotation, the teeth of the pinion being formed to correctly mesh with a uniformly toothed rack profile and to provide a variable pitch circle radius which variable radius (a) has a maximum at a predetermined position of the pinion, (b) reduces gradually in accordance with rotary movement of the pinion in either direction from said predetermined position, and (c) has a minimum at 180° of rotary movement from said predetermined position; and

a driven rack adapted to mesh with the pinion, the teeth of the rack being formed from a profile of said pinion teeth to provide a substantially constant minimum gear ratio when the pinion is at or adjacent said predetermined position, a rapidly decreasing gear ratio for a given rotary movement of the pinion out of said predetermined position when the operating angle of the pinion is relatively small, and a gradually decreasing gear ratio for a given rotary movement of the pinion of said predetermined position when the operating angle of the pinion is relatively large.

4,475,414

REMOTE-CONTROL DEVICE FOR VEHICLE REARVIEW MIRROR

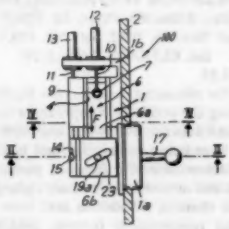
Stéphane Manzoni, 1, rue Pasteur, Saint Claude, France (39200)

Filed Aug. 30, 1982, Ser. No. 413,040

Claims priority, application France, Sep. 11, 1981, 81 17246

Int. Cl.³ F16C *1/10;* **G05G** *9/04*

U.S. Cl. 74—501 M **19 Claims**



1. A remote control apparatus for pivotally positioning a rearview mirror in two coordinate positions, said remote control apparatus comprising:

mirror housing means;

a crosspiece pivotally mounted to said mirror housing means

such as to pivot about a first preselected axis relative to said mirror housing means;

mirror means pivotally mounted to said crosspiece such as to pivot about a second preselected axis relative to said crosspiece, said second preselected axis being perpendicular to said first preselected axis;

a crosspiece portion disposed remote from said first preselected axis;

a first transmission cable having a first end interconnected with said crosspiece portion and a second end opposite said first end, said first end extending in a direction substantially parallel to said second preselected axis such that displacement of said first transmission cable causes said mirror means to pivot about said first preselected axis relative to said mirror housing means;

a lever having a first end, a second end opposite said first end, and an intermediate portion disposed between said first and second ends thereof, said lever being pivotally fastened to said mirror housing means at said intermediate portion such as to pivot about a third preselected axis disposed parallel to said first preselected axis;

a second transmission cable having a first end interconnected with said first end of said lever and a second end opposite said first end, and said first end of said second transmission cable extending in a direction generally parallel to said second preselected axis such that displacement of said second transmission cable causes said lever to pivot about said third preselected axis; and

hinge means interconnecting said second end of said lever with said mirror means at a preselected location on said mirror means spaced away from said second preselected axis such that pivoting motion of said lever about said third preselected axis causes pivoting motion of said mirror means about said second preselected axis relative to said mirror housing means.

4,475,415

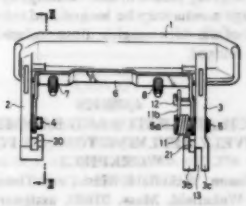
OUTSIDE DOOR HANDLE

Kazumasa Yamamoto, Tokyo, Japan, assignor to Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,609

Int. Cl.³ G05G 1/10

U.S. Cl. 74—543 **2 Claims**



1. An outside door handle assembly, said handle comprising:

a door handle mounted on a door of an automotive vehicle;

a pair of finger projections extending from and being integral with said door handle;

a channel-shaped bracket fixedly attached to a door panel;

two limbs extending from and being integral with said bracket, each of said limbs pivotably connected at an end portion furthest from said bracket to said finger projections, said finger projections being connected at intermediate points to said limbs; and

an inclined groove formed in each end of said finger projections, said ends of said finger projections being furthest from said door handle, said inclined grooves opening towards said end portions of said limbs and said inclined grooves adapted for receiving partially said end portions of said limbs when said door handle has been brought to an upper service position, thereby effectively preventing torsional deflection and deformation of said door handle.

4,475,416

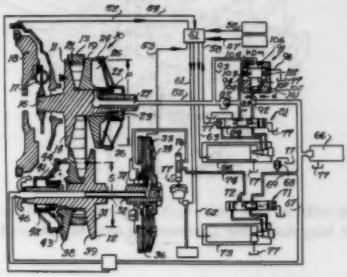
CONTINUOUSLY VARIABLE TRANSMISSION DOWN SHIFT CONTROL

Herbert N. Underwood, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 27, 1982, Ser. No. 402,408

Int. Cl.³ B60K 41/12

U.S. Cl. 74—868 **8 Claims**



1. A continuously variable transmission including a primary pulley and a secondary pulley having an endless transmission member of trapezoidal cross section extending around the pair of pulleys, each pulley including an axially fixed and an axially movable conical disc sheave arranged for gripping opposite edges of said transmission member, each pulley having a fluid actuated expansion chamber device urging the pulley sheaves into gripping engagement with the edges of said endless transmission member, the primary expansion chamber device connected to said primary pulley having a greater effective piston area than the corresponding area of the secondary expansion chamber device connected to said secondary pulley, and a fluid circuit connected to said expansion chamber devices including a source of fluid pressure and a system pressure regulator valve, said fluid circuit including system conduit means communicating regulated system pressure to the secondary expansion chamber device, and a ratio control pressure regulator valve connected between said system conduit and said primary expansion chamber device,

wherein the improvement comprises a ratio relief valve connected in parallel circuit bridging said ratio control regulator valve, said ratio relief valve including a movable shuttle member having a land arranged for limiting flow through an exhaust port, said shuttle having a first face communicating with said primary expansion chamber device and a second face opposed to said first face communicating with said secondary expansion chamber device, said second face having a smaller area than said first face, said shuttle member including an annular face opposed to said first face, and a one-way check valve disposed between said annular face and said first face.

4,475,417

EQUIPMENT FOR GAS-SINGEING RUNS OF TUBULAR TEXTILE MATERIALS

Peter Dornier, Lindau, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,832

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047352

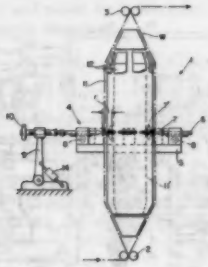
Int. Cl.³ D06C 9/02

U.S. Cl. 26—3 **13 Claims**

1. Equipment for gas-singeing runs of textiles, comprising an adjustable floating expander means in which a cylinder spreads approximately cylindrically and which is used for a textile tubular fabric moving over it, and further comprising at least one annular means surrounding the expander means and acting

as a support for a plurality of singeing means containing gas-burner nozzles, the forward boundary of at least part of the singeing means being adapted to the curvature of the outer contour of the expander,

means for displacing said singeing means in a radial and synchronous manner with respect to the expander means, whereby the singeing means can be adapted to the required diameter of the expander,



and means whereby a rotational motion is superposed on the radial displacement of at least part of the singeing means, said rotation taking place about the axis of displacement of said singeing means in such a manner that neighboring singeing means when projected on a cross-sectional plane always closely adjoin one another.

4,475,418

WIRE STRIPPER

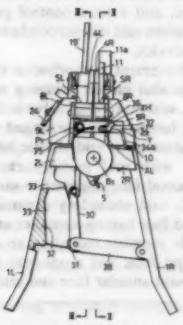
Isamu Tani, Nagoya, Japan, assignor to Kabushiki Kaisha Nagoya Boki Seisakusho, Aichi, Japan

Filed Jan. 7, 1982, Ser. No. 337,705

Claims priority, application Japan, Jan. 24, 1981, 56-9438

Int. Cl.³ H02G *1/12*

U.S. Cl. 81—9.5 A **8 Claims**



1. A wire stripper for stripping an insulating sheath of an electrical wire comprising a first grip; a second grip; clamping means operatively connected to said first grip and adapted to clamp the insulating sheath; cutting means operatively connected to said second grip and adapted to slit and twist the insulating sheath, said cutting means having a first stripping cutter and a second stripping cutter both slidably movable in the opposite direction relative to each other in cooperating relationship with actuation of said first grip and said second grip, said first stripping cutter being operatively connected to said first grip, wherein each of said first stripping cutter and said second stripping cutter is defined by an acute edge-angle portion adapted for cutting the insulating sheath and an obtuse edge-angle portion adapted for twisting the insulating sheath; and stripping means connecting said clamping means to said cutting means and effective to strip off the insulating sheath.

4,475,419

COUNTERHOLDING TOOL FOR ABSORBING TORQUE WHILE TIGHTENING SCREWS

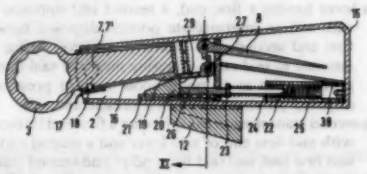
Hans-Peter Neef, Schwabstrasse 33, D-7143 Vaihingen/Enz, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 371,834

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 8112770[U]

Int. Cl.³ B25B *9/00*

U.S. Cl. 81—13 **18 Claims**



1. A counterholding tool for engaging a nut, which in turn is threadedly engaged with a screw or the like, for absorbing torque while the screw or the like is tightened, comprising:

an elongated housing, nut engaging means pivotably supported in one end of said housing for engaging the threaded nut;

wedge means within said housing movable relative to the nut engaging means for securing said nut engaging means in a fixed position;

a receptable pivotably mounted within the housing, wherein the nut engaging means is partly received within the receptacle for support therein;

said wedge means is displaceably mounted within the housing and fixably positioned therein by means of said releasable locking means, wherein said receptacle is provided with a pressure face which presses against said wedge means, and

releasable locking means in said housing, by means of which the wedge means may be locked and released so that the position of the nut engaging means relative to the housing may be relaxed.

4,475,420

WRENCH APPARATUS AND BAR MEANS FOR SELECTIVELY APPLYING TORQUE FORCES TO A WORKPIECE

Thomas Atkinson, Wakefield, Mass., and Thomas R. Dowd, 23 Avon St., Wakefield, Mass. 01880, assignors to Thomas R. Dowd, Reading, Mass.

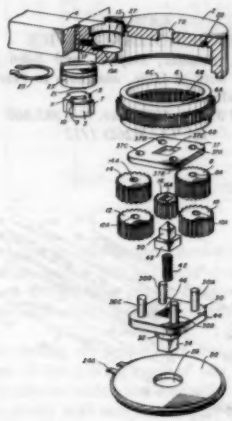
Filed Apr. 29, 1982, Ser. No. 372,894

Int. Cl.³ B25B *13/46, 17/02*

U.S. Cl. 81—58.3 **4 Claims**

1. A ratchet wrench apparatus for applying a torque force to a work piece, including a cylindrical housing body formed with an opening at the upper side thereof and having a lever body extending radially outwardly therefrom, a ring gear rotatably mounted in the housing and presenting inner and outer gear teeth, a ratchet gear mechanism adjustably supported in the said lever body and engageable with the outer teeth of the ring gear to exert turning forces on the ring gear when the lever body is turned, spacer means located at the upper side of the ring gear, retaining plate means detachably secured at the under side of the housing in a position to support the ring gear, a rotor body supported in the housing on the retaining plate means and having a depending socket driver portion located through the retaining plate means, post ele-

ments fixed at the upper side of the rotor body, planetary gears mounted on the post elements in mesh with the inner gear teeth of the said ring gear, a sun gear supported on the rotor body in a position to mesh with the planetary gears and rotate with the planetary gears when the lever body is rotated, said sun gear being internally recessed to form an opening which is of substantially square cross section and the rotor body being formed with a recess having a coiled spring received therein, said coiled spring having a locking pin device attached to the upper side thereof, said locking pin device consisting of a locking pin of substantially square cross section which is movable in the



opening in the said sun gear, said coiled spring normally urges the locking pin in engagement with the sun gear to hold the sun gear in a position to mesh with the planetary gears and to rotate with these gears when the lever body is turned, a selector bar element engageable through the housing and sun gear opening to move the locking pin device downwardly out of engagement with the sun gear and into engagement with the recess of the rotor body and said selector bar when held in a downwardly located position being operable to hold the sun gear stationary and to allow the rotor body and planetary gears to rotate relative to the sun gear when the lever body is turned thus providing a torque multiplying mode of operation.

4,475,421

LATHE

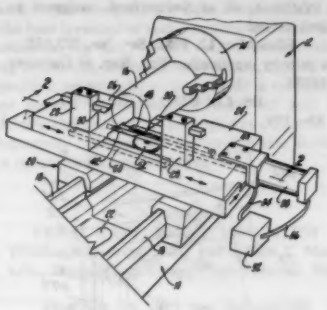
Sylvester R. Cudnohufsky, Troy, Mich., assignor to Triple R Hydraulics, Inc., Madison Heights, Mich.

Filed Sep. 13, 1982, Ser. No. 417,378

Int. Cl.³ B23B *21/00*

U.S. Cl. 82—25 **3 Claims**

1. In a lathe of the type which includes a base, a rotary driven head on the base for supporting a workpiece to be machined, a carriage on the base movable in a direction axially of the rotating workpiece, a pair of diametrically opposed tool slides having tools mounted thereon and being mounted on the carriage for rectilinear movement toward and away from each other in a direction radially of the rotating workpiece to cause the tools mounted on said slides to machine the rotating workpiece, that improvement which comprises, a reversible motor having a housing fixedly mounted on one of said slides, said motor having an output shaft extending parallel to the rectilinear path of travel of the tool slides, said output shaft extending from said motor to and connected directly with the other tool slide such that, when the motor is operated in opposite directions, said output shaft is placed in axial tension and compression and applies equal and opposite forces to the two slides to shift the slides on the carriage toward and away from the rotating workpiece and a timing mechanism for assuring precisely accurate equal displacements of the two tool slides in unison comprising a pair of gear racks fixedly mounted in



opposed relation, one on each tool slide, and an idler pinion journalled on the carriage and meshing with each gear rack.

4,475,422

METHOD OF SLITTING OR EDGE TRIMMING STRIP MATERIAL

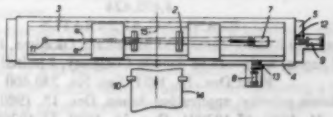
Kenneth T. Lawson, Stokesley, England, assignor to Davy McKee (Poole) Ltd., Poole, England

Filed Feb. 25, 1983, Ser. No. 469,978

Claims priority, application United Kingdom, Feb. 26, 1982, 8205668

Int. Cl.³ B23D *19/06*

U.S. Cl. 83—13 **6 Claims**



1. A method of trimming or slitting strip material on a process line using one or more pairs of trimmer knives mounted for movement laterally to the direction of travel of the strip, the or each pair of knives being pivotable so as to vary the angle α they make with the centre line of the process line, comprising:

determining the lateral position of the strip relative to the lateral position of the trimmer;

controlling lateral movement of the trimmer in response to lateral movement of the centre line of the strip, so as to tend to keep the trimmer and strip in constant relationship;

determining the lateral speed V_T of the or each pair of trimmer knives,

determining the longitudinal speed V or the strip, and

controlling the pivotal movement of the or each pair of knives such that the angle α tends to equal a required angle of $\text{TAN}^{-1}(V_{T/V})$ or any approximation thereto, so that the or each pair of knives remains substantially parallel to the line of cut made in the strip.

4,475,423

SHEAR FOR CUTTING ROD-FORM MATERIAL

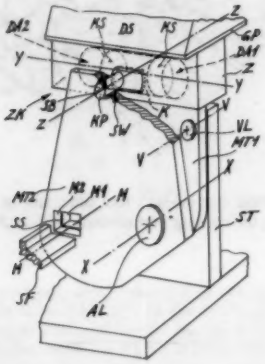
Ernst Fuchs; Karl Rimmele, both of Schmerikon, and Hans Bieri, Pfäffikon, all of Switzerland, assignors to Mecapec S.A., Switzerland

Filed May 12, 1982, Ser. No. 377,432

Claims priority, application Fed. Rep. of Germany, May 19, 1981, 3119881

Int. Cl.³ B23D *23/00, 15/00*

U.S. Cl. 83—199 **12 Claims**



1. A shear for cutting stock comprising first and second movable cutting blade assemblies including first and second cutting blades respectively, said first cutting blade assembly including a pump for pumping fluid out at a high pressure and cylinder-piston means rigidly interconnected with said pump and operable by said high-pressure fluid to effect movement of said piston, said pump and said cylinder-piston means being rigidly joined to and movable in common with said first cutting blade assembly, and a coupling pin mounted on said piston and received in a guide slot in said second cutting blade assembly to effect movement of said second cutting blade assembly relative to said first cutting blade assembly upon movement of said piston, to thereby cut the stock.

4,475,424

BLANKING APPARATUS

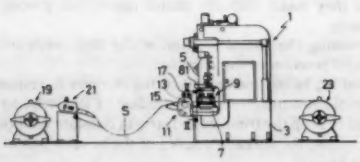
Shigeyoshi Kouno, Zama, and Masakazu Okajima, Isehara, both of Japan, assignors to Amada Company, Limited, Japan

Filed Dec. 14, 1981, Ser. No. 330,400

Claims priority, application Japan, Dec. 15, 1980, 55-177003; Dec. 24, 1980, 55-182091; Dec. 24, 1980, 55-182088; Dec. 25, 1980, 55-185572[U]

Int. Cl.³ B26F *1/04*

U.S. Cl. 83—549 **3 Claims**



1. A blanking apparatus, comprising:

a press;

a ram vertically movably provided on the press;

two blanking units being disposed just beneath the ram and further being so disposed so as to be horizontally movable in a direction normal to a feeding path along which a strip to be blanked is fed;

blanking tools being arranged in the blanking units; and

a striker member for working on the blanking tools, said striking member being longer than the length by which the blanking unit is movable, means for moving said striking member horizontally in the direction of the feeding path such that said striking member may be selectively moved in alignment with either of said blanking units, and said striking member further being provided at a lower end of the ram.

4,475,425

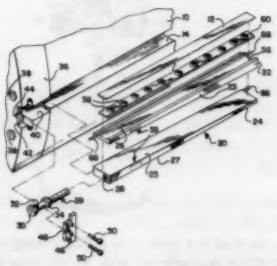
BLADE HOLDING DEVICE

Dineshchandra G. Punater, Dayton, and John L. Herman, Huber Heights, both of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Jun. 1, 1982, Ser. No. 383,865

Int. Cl.³ B26D *1/12*

U.S. Cl. 83—700 **17 Claims**



1. A blade holding device for use with a blade and a cylinder, the cylinder having a longitudinal recess defined in the periphery thereof parallel to the axis of the cylinder, comprising:

at least one wedge member fittable within the recess, said wedge member having an inner face and an outer face, said wedge member being operative in response to movement thereof relative to the recess for wedging said wedge member within the recess;

at least one spring member;

said wedge member being insertable within the recess such that the blade is disposed between said outer face and a wall of the recess and said spring member is disposed between one of said faces and a wall of the recess; and

means for performing movement of said wedge member relative to the recess whereby the blade is clamped between said wedge member and the recess wall.

4,475,426

APPARATUS FOR SUPPLYING CHEWING GUM TO A PACKAGING MACHINE

Werner Dämmig, Fürth, and Heinz Möller, Eggolsheim, both of Fed. Rep. of Germany, assignors to "LOESCH"-Verpackungstechnik GmbH & Co KG, Forchheim, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,177

Int. Cl.³ B26D *3/08, 7/32*

U.S. Cl. 83—887 **5 Claims**

1. Apparatus for supplying chewing gum along a path to the driven feeder of a packaging machine, comprising:

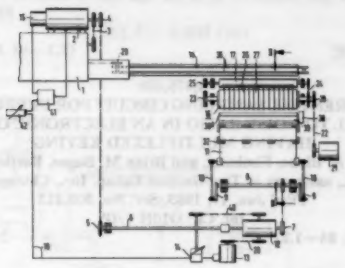
a magazine for chewing gum slabs;

a scoring device having cutting rollers, and said scoring device being juxtaposed with said magazine along said path;

a pushing device associated with said magazine for advanc-

ing successive chewing gum slabs along said path from the magazine to the scoring device;

a transfer device including feeding rollers, said transfer device being juxtaposed with said scoring device for forwarding chewing gum slabs which have been scored by said scoring device, to the driven feeder of the packaging machine;



means for driving said pushing device in timed relation to the driven feeder, and including means for shifting the phase of the pushing device relative to the packaging machine depending upon the speed of the packaging machine;

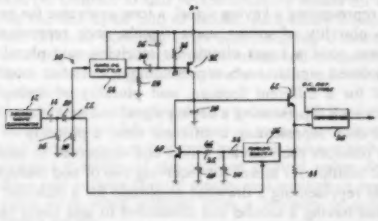
means for driving the feed rollers at a constant/speed independent of the driving rates of said packaging machine and the driven feeder; and means for driving said cutting rollers jointly with said feed rollers.

4,475,427

FREQUENCY INDEPENDENT RAMP GENERATOR

David T. Starkey, Billerica, Mass., assignor to Norlin Industries, Inc., White Plains, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,158
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **6 Claims**



1. A tone generator for producing a tone signal having a periodic ramp waveform in an electronic musical instrument comprising:

means producing an input signal having periodic transistions of a selected polarity;

a charge storage device;

means responsive to said input signal for developing a control signal having a waveform including first and second portions respectively representing first and second relatively short time intervals relative to the period of said ramp waveform occurring in respective time succession only substantially immediately after each occurrence of one of said transitions of said input signal;

means charging said charge storage device to a predetermined voltage during each of said second time intervals;

a transistor having an emitter-collector circuit connected between said storage device and ground potential for discharging said storage device during the time intervals occurring between the end and beginning of successive ones of said second time intervals; and

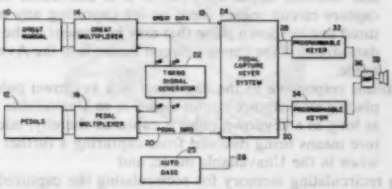
feedback means comprising a capacitive network connected to the base terminal of said transistor and switching means enabled during each of said first time intervals for coupling an amount of charge from said storage device to said capacitive network so as to provide a substantially constant current at the base terminal of said transistor, whereby the current in said emitter-collector circuit is substantially constant for discharging said storage device at a substantially constant rate.

4,475,428

PEDAL CAPTURE KEYER SYSTEM

Billy J. Whittington, Jasper, Ind., and Joseph E. Macke, Glendale, Ariz., assignors to Kimball International, Inc., Jasper, Ind.

Filed Sep. 28, 1982, Ser. No. 424,900
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **19 Claims**



1. In an electronic keyboard musical instrument comprising a keyboard having a plurality of playing keys, multiplex means for scanning said keyboard and producing a time division multiplexed serial data stream comprising a plurality of time slots corresponding to respective keys of the keyboard and keydown pulses in time slots corresponding to actuated ones of the keys, a keyer circuit comprising:

capture circuit means having an input to which said serial data stream is connected for capturing any uncaptured one keydown pulse that may be present in the serial data stream if the capture circuit means is in an Available mode, said capture circuit means capturing only said one keydown pulse regardless of the number of pulses in said data stream,

means responsive to the capturing of a keydown pulse for placing said capture circuit means in an Unavailable mode as long as a keydown pulse is captured thereby, said capture circuit means being disabled from capturing a further keydown pulse when in the Unavailable mode,

a recirculating memory means synchronized with the serial data stream for recirculating the captured keydown pulse,

said capture circuit means including gating means, having an input connected to the serial data stream and an input to which the recirculated keydown pulse is connected, for rejecting all keydown pulses in the serial data stream except those keydown pulses that are time coincident with the recirculated keydown pulse when in the Unavailable mode, and

tone code producing means having an input to which the captured keydown pulses are connected for producing a coded signal responsive to the time position of the captured keydown pulse wherein the coded signal pertains to the tone corresponding to the time position of the captured keydown pulse.

18. In an electronic organ having a pedalboard with a plurality of pedals normally played by the feet of the performer, a keyboard with a plurality of playing keys normally played by the hands of the performer, pedal multiplex means for scanning said pedalboard and producing a pedal time division multiplexed serial data stream comprising a plurality of time slots corresponding to the pedals of the pedalboard with keydown

pulses in time slots pertaining to actuated ones of the pedals, and keyboard multiplex means for scanning said keyboard and producing a keyboard time division multiplexed serial data stream comprising a plurality of time slots corresponding to the keys of the keyboard with cyclically recurring keydown pulses in time slots pertaining to actuated ones of the keys, the time slots corresponding to keys and pedals of like pitch and octave positions occurring simultaneously so that the data streams are synchronized with each other, a system for producing base tones comprising:

a selectively actuable automatic bass generator means having an input to which the keyboard data stream is connected for selecting only a single cyclically recurring keydown pulse in the keyboard data stream pertaining to the lowest in frequency actuated key of the keyboard within a selected group of the keys of the keyboard,

capture circuit means having an input,

selection means for connecting either the pedal serial data stream or the selected cyclically recurring single pulse keydown in the keyboard data stream to the capture circuit means input,

said capture circuit means including means for capturing said selected keydown pulse if it is connected to said capture circuit means input or for capturing any uncaptured one keydown pulse that may be present in the pedal data stream if the capture circuit means is in the Available mode,

means responsive to the capturing of a keydown pulse for placing said capture circuit means in an Unavailable mode as long as a keydown pulse is captured thereby, said capture means being disabled from capturing a further pulse when in the Unavailable mode, and

a recirculating memory for recirculating the captured keydown pulse in synchronism with the data streams and preventing the capturing of a further keydown pulse in a time slot other than the time slot of the recirculating keydown pulse.

4,475,429

ELECTRONIC EQUIPMENT WITH TONE GENERATING FUNCTION

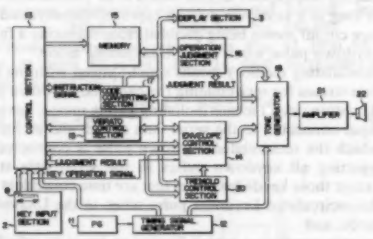
Kazuyasu Suzuki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 331,171, Dec. 16, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,579

Claims priority, application Japan, Dec. 27, 1980, 55-187456

Int. Cl.³ G10H *1/06, 7/00*

U.S. Cl. 84—1.19 **11 Claims**



1. Electronic equipment having a tone generating function comprising:

timbre memory means for storing timbre waveforms as a digital value, said timbre memory means having n bit positions (where n is a positive integer);

said readout means reading out the specified timbre waveform from said timbre memory means by counting said reference signals, said readout means including means for counting said reference signals m times (where m is a positive integer) at a positions of n positions (where a is a positive integer and a <n), and for counting said reference signals (m+1) times at (n-a) positions, said specified timbre waveform of said timbre memory means being read out at a note frequency F=f/[n(m+1)-a].

4,475,430

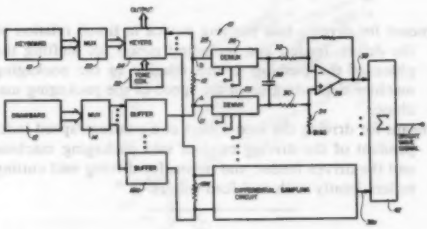
DIFFERENTIAL SAMPLING CIRCUIT FOR IMPROVING SIGNAL TO NOISE RATIO IN AN ELECTRONIC ORGAN HAVING MULTIPLEXED KEYING

Angelo A. Bione, Elmhurst, and Brian M. Bagus, Bartlett, both of Ill., assignors to The Marmon Group, Inc., Chicago, Ill.

Filed Jun. 17, 1983, Ser. No. 505,313

Int. Cl.³ G10H *1/08*

U.S. Cl. 84—1.22 **2 Claims**



1. A circuit for improving the signal to noise ratio in an electronic organ having summation circuit means for producing bright wave signals, harmonic multiplexer means for providing a plurality of multiplexed signals each representing a drawbar amplitude signal for a different footage, keying multiplexer means for providing a plurality of multiplexed signals each representing a keying signal, a tone generator for providing a plurality of square wave signals, each representing a different tone, a keyer circuit for receiving said plurality of multiplexed signals each representing a drawbar amplitude signal for a different footage, said plurality of multiplexed signals each representing a keying signal and said square wave signal each representing a different tone, a plurality of sampling resistors each having a first end connected to said harmonic multiplexer means for receiving one of said multiplexed signals representing a drawbar amplitude for a different footage and having a second end connected to said keyer circuit, said differential circuit having a plurality of channels and each channel comprising:

a first demultiplexer means connected to said first end of one of said plurality of sampling resistors for providing a first output signal representing a d.c. component signal;

a second demultiplexer means connected to said second end of one of said sampling resistors for providing a second output signal representing a d.c. component signal and an audio component signal;

a sample and hold circuit for receiving said first and second signal;

a differential circuit for receiving said first and second signals and for removing the d.c. component of each of said first and second signals and for providing a square wave audio output signal; and,

said square wave output signal for each of said plurality of channels being connected to said summation circuit means for producing a bright wave signal.

4,475,431

ELECTRONIC MUSICAL INSTRUMENT

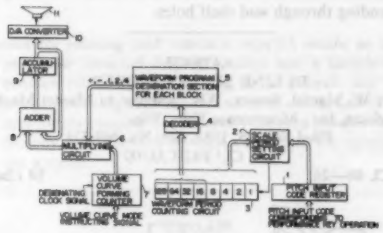
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 215,024, Dec. 10, 1980, abandoned, which is a continuation of Ser. No. 20,749, Mar. 15, 1979, abandoned. This application Jul. 7, 1982, Ser. No. 395,920

Claims priority, application Japan, Mar. 18, 1978, 53-31369; Apr. 17, 1978, 53-45528; Apr. 20, 1978, 53-46836; Jun. 13, 1978, 53-71064

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.27 **20 Claims**



1. An electronic musical instrument comprising:

a plurality of performance keys selectively operable to cause the production of sounds corresponding to respective notes of the musical scale;

detecting means (**114**) coupled to said performance keys for detecting the operation of said performance keys;

a volume control means (**7, 54, 55**) responsive to said detecting means for generating a volume control value for digitally controlling an increase or decrease of performance volume of the musical sound corresponding to the operated performance keys as a function of a lapse of time since the actuation of said performance keys;

a period counting means (**3, 34-1, 34-2, 36, 40, 41**) for counting one cycle of a musical sound waveform by a plurality of counting steps in order to digitally produce a musical sound wave;

means (**4**) coupled to said period counting means for dividing the one cycle into m blocks, each block comprising one or more counting steps and including a number of counting steps which is predetermined and independent of the rate of change of amplitude of the musical sound waveform;

a musical sound wave designating means (**5,35**) for designating the rise and fall of the musical sound wave in each of said blocks by a positive or negative value which is an integral multiple of the volume control value derived from said volume control means, said positive or negative value each being selected from a plurality of predetermined values;

said positive or negative value designating the rise and fall of the musical sound wave in each of the blocks having an absolute value which is 2^n times said volume control value derived from said volume control means, where n is an integer; and

means (**69**) coupled to said musical sound wave designating means for shifting said volume control value derived from said volume control means, thereby producing said positive or negative value.

4,475,432

STRING-CLAMPING MEANS

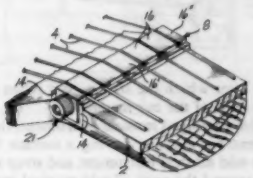
Paul F. Stroh, 1022 - 42nd SW., Seattle, Wash. 98146

Filed Oct. 26, 1981, Ser. No. 315,318

Int. Cl.³ G10D *3/12*

U.S. Cl. 84—314 N **7 Claims**

1. In a guitar-like musical instrument, a head end portion and a body end portion, several elongated, generally parallel, transversely spaced strings, means for anchoring the opposite end portions of said strings at said head and body end portions, respectively, a neck portion having an upper surface forming a fingerboard, a nut portion between said head and neck portions for maintaining said strings a desired distance above the fingerboard, means for clamping said strings closely adjacent to said nut portion and including several upright, separate, string-clamping block portions forming a row extending transversely of said strings, each of a plurality of individual strings being fitted between adjacent block portions, and means guiding said block portions for movement toward each other so as to clamp firmly the strings fitted therebetween and away from each other so as to release said strings in the area of said nut portion while said strings remain anchored at said head and body portions, said clamping means including block-moving means engageable against said block portions at opposite ends of said row, respectively, for effecting such relative movement of said block portions toward each other and releasable for permitting relative movement of said block portions away from each



other, said block-moving means being disposed entirely below said strings in the area of said nut portion so that, with said block-moving means released, said strings can be moved upward from between said block portions without interference from said block-moving means.

2. In a guitar-like musical instrument, a head end portion and a body end portion, several elongated, generally parallel, transversely spaced strings, means for anchoring the opposite end portions of said strings at said head and body end portions, respectively, a neck portion having an upper surface forming a fingerboard, a nut portion between said head and neck portions for maintaining said strings a desired distance above the fingerboard, several separate string-clamping blocks forming a row extending transversely of said strings closely adjacent to said nut portion, each of a plurality of individual strings being fitted between adjacent blocks, said blocks being relatively movable toward each other so as to clamp firmly the strings fitted therebetween, and one and only one bolt extending through said blocks and turnable for effecting such relative movement of said blocks to clamp said strings.

4,475,433

CAPO FOR A STRINGED MUSICAL INSTRUMENT

John Williamson, and Robert Falloon, both of Warnham, England, assignors to Muse Music Company, Limited, England

Continuation-in-part of Ser. No. 212,814, Dec. 4, 1980, abandoned. This application Jun. 22, 1982, Ser. No. 390,957

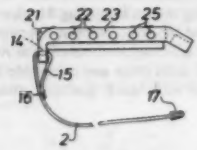
Claims priority, application United Kingdom, Jun. 6, 1980, 8018629

Int. Cl.³ G10D *3/04*; G10G *7/02*

U.S. Cl. 84—318 **13 Claims**

1. A capo for a stringed musical instrument, the capo comprising a resilient bar member having a flat surface for engaging the strings of a said musical instrument, said bar member having a depending flange at one end thereof adapted to hook over and engage a side surface of the neck of a said musical instrument to locate the bar member relative to the instrument and a transverse slot adjacent the other end thereof, a strap one end of which is connected to said one end of the bar member and the other end of which, after having been passed around the neck of a said instrument, is adapted to be passed through

said transverse slot and pulled tight against the resistance of said depending flange engaging with said side surface of the neck of the instrument to exert a pull on both ends of said bar member and draw said bar member firmly and evenly into engagement with the strings of the instrument, and releasable fastening means having two components which are provided at different locations along an outer surface of said strap whereby after said other end of the strap has been passed through said slot it can be doubled back on itself and secured by engagement of the two components of the fastening means one with the other while maintaining the pull on both ends of the bar member, said bar member being substantially rigid but having sufficient resilience therein as to deflect to the shape of that part of



the instrument over which the strings pass when a said pull is exerted on the ends of the bar member.

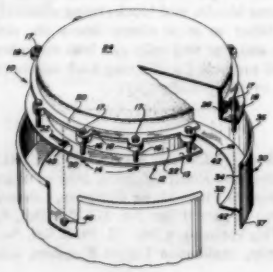
10. A capo for a stringed musical instrument, the capo comprising a resilient bar member having a surface for engaging the strings of a said musical instrument and strap means which can be passed around the neck of said musical instrument and secured to maintain said bar member in engagement with the strings of the instrument, said bar member having at least one aperture therein and having tuning means mounted in said aperture, said tuning means comprising a reed adapted, when blown, to produce a note of a particular pitch, whereby the capo can also be used as a pitch-pipe for tuning the musical instrument.

4,475,434

QUICK RELEASE DRUM HEAD ASSEMBLY

Ward L. Willis, P.O. Box 95, Breinigsville, Pa. 18031

Filed Sep. 20, 1982, Ser. No. 419,983
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—411 R **3 Claims**



1. A drum, comprising:

a shell having a rim section at one end thereof;

a generally flat, annular shelf extending inwardly from said rim section, said shelf having a plurality of cap screws threadly engaged around the top surface thereof, said shelf further having a plurality of holes therethrough; and

a drum head assembly, comprising:

a drum head;

a drum head supporting member having a flange extending from the base thereof, said flange having a plurality of threaded holes and a plurality of tapered apertures spaced circumferentially therearound, one end of said tapered apertures adapted to receive said cap screws therethrough whereas the other end of said tapered apertures is smaller than the cap of said cap screws, whereby said supporting member may be removably fixed to said shelf by inserting said cap screws through said one end of said tapered apertures and by rotating said supporting member until said other end of said tapered apertures are located under said cap of said cap screws;

a drum head tensioning ring having holes spaced therearound; and

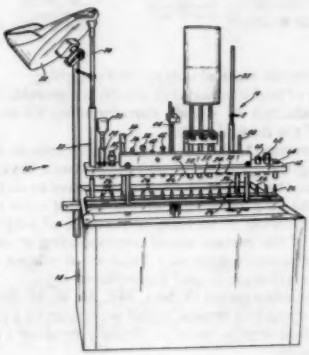
tensioning bolts extending through said ring holes, being threaded into said flange threaded holes, and freely extending through said shelf holes.

4,475,435

IN LINE BULLET FEEDER

Robert W. Mantel, Sussex, Wis., assignor to Mantel Machine Products, Inc., Menomonee Falls, Wis.

Filed Feb. 25, 1983, Ser. No. 469,731
Int. Cl.³ F42B *33/00*
U.S. Cl. 86—26 **14 Claims**



1. An inline bullet feed assembly for seating a bullet in the open end of a shell, said assembly comprising

a housing,

a passage through said housing,

a gravity feed bullet reservior connected to one end of said passage,

catch means in said passage for preventing bullets from dropping through the passage, said catch means being responsive to the presence of a shell in said passage to release said bullet and allow the bullet to enter the open end of said shell, and

latch means in said passage spaced upwardly from said catch means for preventing upward movement of the bullet supported in the passage by said catch means whereby the bullet will be forced into the open end of the shell.

4,475,436

MISSILE LAUNCHER

Dennis R. Campbell, Lynnwood, Wash., assignor to The Boeing Company, Seattle, Wash.

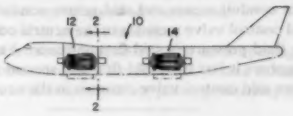
Filed Apr. 21, 1980, Ser. No. 141,962
Int. Cl.³ F41F *3/06*
U.S. Cl. 89—1.804 **17 Claims**

1. A missile launching system mountable within an aircraft provided with an opening through which missiles are launched from said aircraft, comprising:

a plurality of rotary missile launchers, each comprising means for supporting a plurality of missiles in a cluster

spaced about the axis of rotation of the rotary missile launcher;

a rotatable support means for said plurality of missile launchers, mounted for rotation about an axis, and including means supporting said plurality of launchers in a cluster spaced about the axis of rotation of said support means;



means for rotating said rotatable support means so that a particular launcher may be rotated into a launch-ready position relative to the opening in the aircraft; and

means for rotating each said launcher about its axis of rotation for the purpose of selectively moving missiles carried thereby into a launch position relative to the opening in the aircraft.

4,475,437

SEAR ACTUATOR

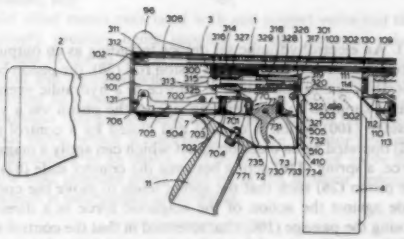
Leroy J. Sullivan, Singapore, Singapore, assignor to Chartered Industries of Singapore Private Limited, Jurong Town, Singapore

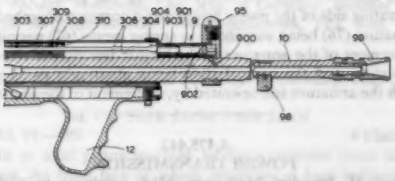
Division of Ser. No. 280,740, Jul. 6, 1981, Pat. No. 4,416,186. This application Aug. 3, 1983, Ser. No. 520,117

Claims priority, application United Kingdom, Dec. 11, 1980, 80 39739

Int. Cl.³ F41D *11/02*

U.S. Cl. 89—148 **4 Claims**





1. A sear actuator for a gun having a receiver, a trigger supported by the receiver and a sear housed within said receiver, comprising a rotatable member extending between opposing walls of the receiver and a slidable rod extending transversely internally through said rotatable member so as to be rotatable therewith through like angles of movement, said member being rotatable between a first position in which said rod is arranged to interconnect motion of the trigger to the sear and a second position in which said rod is rotated therewith so that the interconnection between the trigger and the sear is removed.

4,475,438

GAS OPERATED, AUTOMATIC OR SEMI-AUTOMATIC GUNS

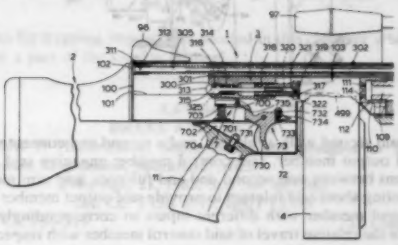
Leroy J. Sullivan, Faber Heights, Singapore, assignor to Chartered Industries of Singapore Private Ltd., Jurong Town, Singapore

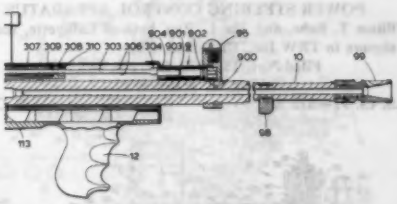
Continuation of Ser. No. 280,715, Jul. 6, 1981, abandoned. This application Oct. 4, 1983, Ser. No. 538,833

Claims priority, application United Kingdom, Dec. 11, 1980, 8039746

Int. Cl.³ F41D *11/12*

U.S. Cl. 89—191 R **25 Claims**





1. A gas operated gun for firing a live cartridge of predetermined length comprising a case, a propellant within said case and a bullet at one end of the case arranged to be driven by said propellant, said gun including a receiver having a rear wall at one end and a barrel at the other end thereof, said receiver also having a cartridge feed station, a bolt means movable within said receiver, a main drive spring arranged to cooperate with the bolt means and to urge the bolt means toward the barrel, whereby the product of sprung weight×spring force×cycling distance is equal to $(0.5I)^2 \times 0.5g \pm 15\%$, where sprung weight is the total weight in kilograms of all components driven toward the barrel by the main drive spring, the spring force is an average value of spring forces that decelerate the sprung weight as said sprung weight travels away from said barrel and which accelerates the sprung weight as it travels forwardly toward said barrel, cycling distance is the length of allowable travel of the bolt means in meters, I is the cartridge impulse and g is acceleration due to gravity, the receiver and bolt means being arranged so that the bolt means does not impact said rear wall.

4,475,439

TANDEM BRAKE BOOSTER

Lawrence R. Myers, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

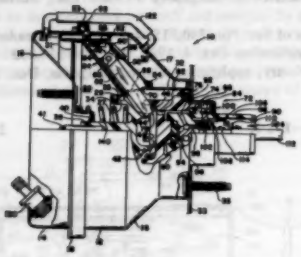
Filed Sep. 2, 1983, Ser. No. 529,171

Int. Cl.³ F01B *7/02*; F15B *13/14*

U.S. Cl. 91—170 R **10 Claims**

1. In a tandem brake booster having a housing wherein first

and second walls move in opposite directions within a cavity therein to produce first and second output forces in response to an input force applied to a control member and a lever arrangement through which said second output force is presented to an output member and combined therein with said first output force to create a joint output force, said lever arrangement being characterized by arm means having a first end connected



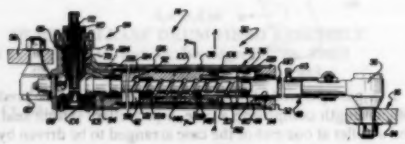
to said second wall, a fulcrum, and a second end connected to said output member, said control member engaging said arm means between said second end and fulcrum, said arm means pivoting about said fulcrum to provide said output member and control member with different inputs to correspondingly reduce the relative travel of said control member with respect to said output member.

4,475,440

POWER STEERING CONTROL APPARATUS

William T. Rabe, and Jim L. Rau, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 15, 1982, Ser. No. 441,503
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—375 A **21 Claims**



1. A power steering apparatus for effecting turning movement of steerable vehicle wheels, said apparatus comprising

motor means operable to effect turning movement of the steerable vehicle wheels, said motor means including first and second motor chambers,

control valve means operable from a neutral condition in which said motor means is inactive to a first actuated condition to direct fluid pressure to said first motor chamber to effect operation of said motor means to turn the steerable vehicle wheels in a first direction, said control valve means being operable from the neutral condition to a second actuated condition to direct fluid pressure to said second motor chamber to effect operation of said motor means to turn the steerable vehicle wheels in a second direction,

supply conduit means for conducting fluid from a source of fluid to said control valve means at a first pressure,

return conduit means for conducting fluid from said control valve means at a second pressure when said control valve means is in the neutral condition, and

vent conduit means for conducting to said control valve means a third fluid pressure which is less than said first and second fluid pressures and through which there is substantially no fluid flow when said control valve means is in the neutral condition,

said control valve means connecting said vent conduit means in fluid communication with said first and second motor cylinder chambers and connecting said supply conduit means in fluid communication with said return conduit means when said control valve means is in the neutral condition,

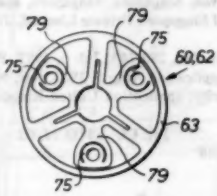
said control valve means blocking fluid communication between said vent conduit means and said supply conduit means and blocking fluid communication between said vent conduit means and said return conduit means when said control valve means is in the neutral condition so that the fluid pressure in said first and second motor cylinder chambers is less than said first and second fluid pressures when said control valve means is in the neutral condition.

4,475,441

ELECTROHYDRAULIC SET DEVICE

Göran Henriksson, Backsippestigen 4, S-575 00 Eksjö, and Sune Lindahl, Trägårdsgaten 14, S-570 34 Mariannelund, both of Sweden

PCT No. PCT/SE81/00015, § 371 Date Sep. 21, 1981, § 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02185, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 23, 1981, Ser. No. 305,643
Claims priority, application Sweden, Jan. 24, 1980, 8000575
Int. Cl.³ F15B *13/16*
U.S. Cl. 91—387 **9 Claims**



1. An electrohydraulic set device including as an output set element a piston (**26**) having a piston rod (**28**), the piston being operable against the action of a force of a hydraulic pressure, that is supplied to an operating side of the piston via a valve passage (**100**) which is opened and closed by a control slide (**82**) operated by an electromagnet which can apply a magnetic force, a spring (**116**) acting between the control slide (**82**) and the piston (**26**) such that the spring tends to move the control slide against the action of the magnetic force in a direction closing the passage (**100**) characterized in that the control slide (**82**) is radially spaced from the piston rod (**28**) of the piston (**26**), the control slide being located together with a coil (**22**) of the electromagnet and an associated armature (**76**) in a common chamber with the coil encircling the piston rod, said operating side of the piston being in said common chamber, the armature (**76**) being suspended in spring means (**62**) permitting movement of the armature in the length direction of the control slide, and the control slide being abuttingly engageable with the armature and operated by, movement of the armature.

4,475,442

POWER TRANSMISSION

Robert H. Breeden, Metamora, Mich., assignor to Vickers, Incorporated, Troy, Mich.

Filed Feb. 8, 1982, Ser. No. 346,564
Int. Cl.³ F15B *11/08*
U.S. Cl. 91—461 **4 Claims**

1. A hydraulic control system comprising

a hydraulic actuator having an element and opposed openings adapted to alternately function as inlets and outlets for moving the element of the actuator in opposite directions,

a pump for supplying fluid to said actuator,

pilot operated meter-in valve means to which the fluid from the pump is supplied,

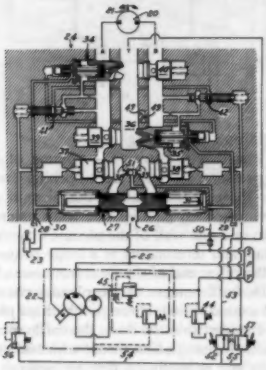
said meter-in valve means being pilot controlled by alternately supplying fluid at pilot pressure to said meter-in valve means for controlling the direction of movement of the actuator,

a pair of lines extending from said meter-in valve means to said respective openings of said actuator,

a drop check valve in each said line,

meter-out valve means associated with each opening of the actuator for controlling the flow out of said actuator,

said meter-out valve means being pilot operated by the pilot pressure,



a poppet valve associated with each said meter-out valve means, and

relief valve means associated with said poppet valve and the supply pressure being supplied by said meter-in valve means to one of said actuator openings functioning as an inlet and operable when the meter-in valve means is returned to a neutral position due to an absence of pilot pressure thereon to cause the poppet valve of the meter-out valve, which is associated with the actuator opening functioning as an outlet, to function as a relief valve for the load pressure being built up at the actuator opening which is functioning as an outlet.

4,475,443

AXIAL PISTON MACHINE WITH SUCTION LINE IMPURITY TRAP

Franz Forster, Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

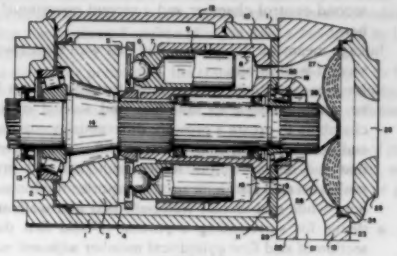
Filed May 20, 1982, Ser. No. 380,130

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120334

Int. Cl.³ F01B *13/04*; F15B *21/04*

U.S. Cl. 91—499 **4 Claims**

1. In an axial piston machine having a cylinder drum in a housing, the front face of which drum lies at least indirectly against a control bottom pickup element, the improvement comprising, a substantially semi-circular suction channel and a spaced substantially semi-circular pressure channel located in said control bottom pickup element, said channels each extending to an external connection opening, and means in said suction channel in the control bottom pickup element for trapping impurities and wherein said pump is designed as a tapered washer pump, the shaft of which is provided with a free end for connection with an additional energy consumer, and whereby a chamber, closed by a cover, is provided around this free shaft end in the control bottom pickup element, and the



means for trapping impurities is located in this chamber which forms a part of the suction channel.

4,475,444

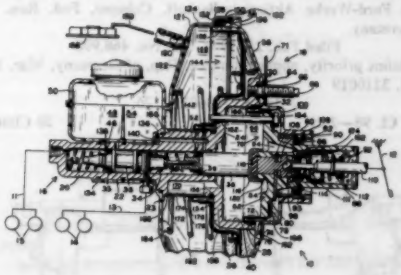
BRAKE APPARATUS

Richard T. Hendrickson, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 21, 1983, Ser. No. 487,542

Int. Cl.³ F15B *9/10*; B60T *13/00*

U.S. Cl. 91—519 **12 Claims**



10. A brake apparatus comprising:

a pressure responsive housing having a first cylindrical member with a first diameter section separated from a second diameter section by a first end wall, said first diameter having a first bore therein and said second diameter section having a second bore therein, said second diameter section having a plurality of radial ears on the end thereof;

piston means located in said first bore to pressurize fluid therein;

a first shell having a peripheral section with an annular lip thereon, a radial section and central section, said central section having an opening therein;

fastener means connected to said plurality of ears for connecting said second diameter section to said radial section to define a first cavity between said first end wall, second diameter section and central section;

first wall means for dividing said first cavity into a first control chamber and a first operational chamber;

a second shell having a second end wall and a second cylindrical section, said second end wall having an opening, said first diameter section of the pressure responsive housing extending through said opening in said second end wall, said second cylindrical section being connected to said peripheral section to define a second cavity between said second end wall, second cylindrical section, the area between the radial section and peripheral section of said

first shell and the first and second diameter section of the first cylindrical member;

second wall means for dividing said second cavity into a second control chamber and a second operational chamber;

linkage means for connecting said first wall means with said second wall means;

valve means responsive to an input for permitting a fluid to be communicated to said first and second operational chambers to create a pressure differential across said first and second walls, said pressure differential developing first and second output forces such that said first wall pushes on said piston means to pressurize fluid in said first bore while said second wall pulls said first wall; and

a sleeve for surrounding a portion of said first diameter section of said first cylindrical member adjacent said first end wall, said sleeve having a series of openings therein through which said second chamber is connected to said first chamber, said sleeve forming a substantially smooth surface which permits said second wall to freely move in said second chamber.

4,475,445

AIR GUIDE HOUSING FOR A HEATING OR AIR CONDITIONING DEVICE FOR MOTOR VEHICLES

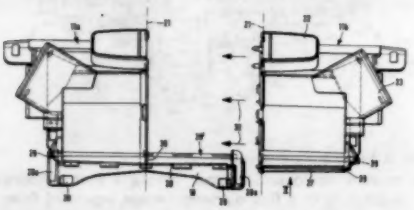
Kurt Dietzsch, Leonberg-Eltingen; Hans-Dieter Oess, Stuttgart; Wolfgang Knicle, Leonberg; Joachim Zander, Frechen, and Gustav Jeske, Pulheim, all of Fed. Rep. of Germany, assignors to Ford-Werke Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Feb. 23, 1983, Ser. No. 468,998

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210019

Int. Cl.³ B60H *1/26*

U.S. Cl. 98—2.05 **20 Claims**



1. A housing for a heating and/or air conditioning unit of a passenger motor vehicle, comprising:

a first housing part formed as a unitary piece and exhibiting internal air guide means for guiding air flow from a heating and/or air conditioning device to air outlet openings at a vehicle passenger space,

a second housing part formed as a unitary piece and exhibiting internal air guide means for guiding air flow from the heating and/or air conditioning device to air outlet openings at the vehicle passenger space,

said first and second housing parts exhibiting force fitting interengageable connecting parts for connecting said parts together,

and a third housing part formed as a unitary piece and exhibiting internal air guide means for guiding air flow from the heating and/or air conditioning device to air outlet openings at the vehicle passenger space,

said third housing part extending adjacent both said first and second housing parts and including slidable interengaging parts for accomodating connection of all three parts by relative sliding movements of said first and second parts on the third part.

4,475,446

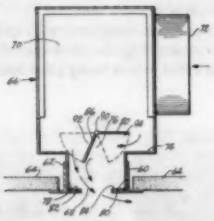
HIGH VOLUME CEILING TYPE AIR DIFFUSER

Francis L. McCall, Hacienda Heights, Calif., assignor to Specified Ceiling Systems, Alhambra, Calif.

Continuation of Ser. No. 363,237, Mar. 29, 1982, abandoned. This application Feb. 7, 1984, Ser. No. 577,725

Int. Cl.³ F24F *13/072*

U.S. Cl. 98—40 D **6 Claims**



6. An air diffuser comprising:

a plenum chamber for storing a volume of air under increased pressure, an outlet duct opening into the plenum chamber through one wall of the plenum chamber, the duct having spaced parallel side walls extending perpendicular to said one wall of the plenum chamber at one end of the duct and terminating in a ledge projecting into the duct at the other end of the duct from one of said parallel side walls, baffle means in the plenum chamber forming first and second throats through which air passes from the plenum chamber into the duct, the baffle means including a first baffle forming a first throat with said one of the duct side walls and providing a first air passage directing air from the plenum chamber at the ledge along said one of the side walls, and a second baffle in the plenum chamber spaced from and forming a second throat with said one wall of the plenum chamber, the second baffle and the first baffle intersecting in the plenum chamber at an angle to each other, the second baffle providing a second air passage directing air from the plenum chamber toward the opposite side of the first baffle from said first air passage, the first baffle deflecting the air in the second air passage at the same ledge.

4,475,447

SPRAY BOOTH APPARATUS

Erhard Kock, Toledo, and Leo J. Zielinski, Maumee, both of Ohio, assignors to Champion Spark Plug Co., Toledo, Ohio

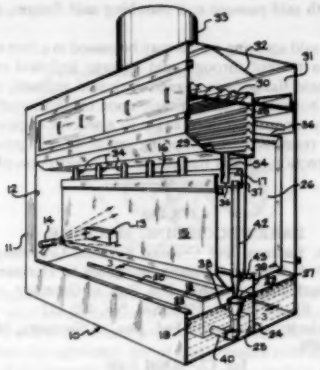
Continuation of Ser. No. 215,184, Dec. 11, 1980, abandoned. This application Jan. 28, 1983, Ser. No. 462,054

Int. Cl.³ B05C *15/00*

U.S. Cl. 98—115 SB **6 Claims**

1. A paint spray booth comprising a wall, reservoir means for holding a liquid having first and second regions with said first region located below said wall, a trough positioned above said wall, said trough being elevated a predetermined distance above said reservoir means, blower means for drawing a continuous flow of air and liquid positioned above said trough, separating means in communication with said blower means for supplying liquid to said trough, such liquid flowing from said trough as a curtain over said wall for entraining paint overspray, said first region of said first reservoir means receiving such liquid curtain and entrained paint overspray, such received liquid and paint overspray flowing from said first reservoir region to said second reservoir region, means for transporting surface liquid and paint overspray from said second reservoir region including a venturi chamber having an upper opening disposed immediately below the liquid surface in said second reservoir region and having a bottom opening smaller than said upper opening, conduit means connecting said bottom opening with said first reservoir region, and jet

pipe means extending from said trough to a position adjacent said venturi chamber for injecting liquid received from said trough into said venturi chamber, said liquid being subjected to a pressure resulting from said trough being elevated such predetermined distance above said reservoir, whereby said liquid under pressure is injected into said venturi chamber by said jet pipe inducing a turbulent flow of liquid from the surface of said second reservoir region through said venturi chamber and through said conduit means to said first reservoir region, such high turbulence in said venturi chamber being induced by the pressure jet of liquid resulting from the predetermined distance between said trough and said reservoir means and the resultant pressure head at the bottom of said jet pipe means.

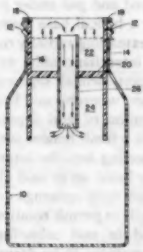


4,475,448

REACTANT/GAS SEPARATION MEANS FOR BEVERAGE CARBONATION DEVICE

Myron D. Shoaf, Cranbury, N.J., and Peter A. Basile, Hudson, Ohio, assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,237
Int. Cl.³ A23L *2/40*
U.S. Cl. 99—323.1 **14 Claims**



1. A pressurizable container for preparing therein a carbonated beverage from a water-based liquid and carbon dioxide generating chemical reactants designed to minimize transfer to the beverage of the resultant products of the chemical reaction, comprising:

a. a container having an opening therein providing access to the contents thereof;

b. a carbonation chamber, insertable into said opening in the container for holding therein the chemical reactants and for substantially isolating the resultant chemical products of the chemical reaction from the beverage to prevent their adversely affecting the palatability of the beverage, said chamber having an upper compartment for holding therein the chemical reactants and a quantity of water to promote the reaction and a lower compartment for releasing the generated carbon dioxide into a beverage in the container;

c. a means for preventing the transfer from the upper to the lower compartment of the resultant chemical products while allowing a transfer of carbon dioxide to carbonate the liquid; and

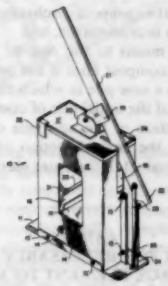
d. a one-way valve on the preventing transfer means of step (c) which is proximate to the liquid to be carbonated, said one-way valve preventing the back flow of liquid or gas into the reaction chamber.

4,475,449

METHOD AND APPARATUS FOR COMPACTING CONTAINERS

Angelo Gianelo, 565 S. 500 West, Salt Lake City, Utah 84101

Filed Apr. 29, 1983, Ser. No. 489,713
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—42 **6 Claims**



1. A method of compacting an empty container which comprises:

applying a compressive force through bar-like means to the sidewall of said container, said force application being initiated at two points substantially opposite to each other and between the ends of said container progressing therefrom to contact an increasing portion of the container's perimeter thereby causing said container sidewall to collapse inwardly along an axis substantially perpendicular to the longitudinal axis of said container;

releasing said compressive force and approximately simultaneously applying a compressive force to one end of said container while the other end is firmly supported so as to collapse the sidewall of said container along the longitudinal axis of said container thereby causing said container ends to be brought together.

4,475,450

COMPOSTING MACHINE

Paul G. Stengel, R.D. #2, Kennett Square, Pa.

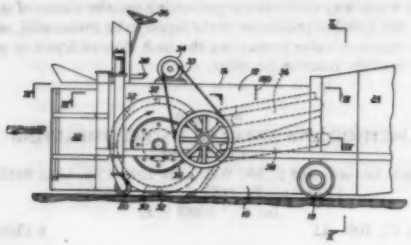
Filed Jul. 19, 1978, Ser. No. 926,013
Int. Cl.³ B30B *5/06*
U.S. Cl. 100—100 **12 Claims**

1. A machine for turning over the compost in an initial pile thereof and molding the compost into a new pile comprising,

A. a wheeled frame,

B. feed means mounted on said frame and of a length to substantially span said initial pile of compost, said means being operable for feeding the compost from said initial pile thereof rearwardly and substantially parallel to the longitudinally extending central vertical plane of said machine,

C. a plurality of conveyors to the rear of said feed means for receiving the compost from said feed means and carrying it further to the rear, certain of said conveyors being positioned for receiving compost discharged from sections of said feed means proximate said plane and for discharging it laterally away from said plane, and certain of said conveyors being positioned for receiving compost discharged from sections of said feed means more remote from said plane and for discharging it laterally toward said



plane, so that the compost discharged respectively from said conveyors is cross-mixed, and

D. pile forming means to the rear of said conveyors for restacking the compost after it has been cross-mixed and molding it into a new pile in which the compost from the outer sections of the initial pile of compost is deposited in the central section of the new pile of compost and the compost from the central section of the initial pile of compost is deposited in the outer sections of the new pile of compost.

4,475,451

MECHANISM FOR RELEASABLY SECURING A DRAINAGE ELEMENT TO A PRESS

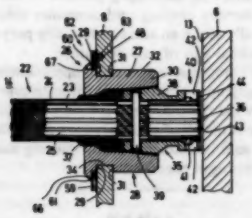
Eduard Hartmann, Schneisingen, Switzerland, assignor to Bueher-Guyer AG, Niederweningen, Switzerland

Filed Aug. 5, 1982, Ser. No. 405,399

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132466

Int. Cl.³ B30B *9/02*

U.S. Cl. 100—107 **15 Claims**



1. In a mechanism for releasably and sealably securing a plurality of longitudinal and flexible drainage elements in a fluid-tight manner to a press-plate of a press-space for squeezing juice from fruits or the like, wherein the press-plate defines a passage, and comprising securing means associated with each drainage element, said securing means including a collar received in said passage and at least partially surrounding a corresponding drainage element near an end thereof, and a securing sleeve connected to said collar and formed with a shoulder abutting the press-plate on a side thereof facing said press-space, said corresponding drainage element being releasably secured by means of said securing means to said press-plate

in combination

said securing means comprising

at least two flanges formed on said collar so as to be spaced from one another and extending radially outwardly only along a portion of the circumference of said collar beyond an annular border of said passage, and wherein said securing means is normally rotatable within said passage, and said press-plate defines at least two recesses communicating with said passage and matching said flanges, respectively,

whereby said securing means may be passed in a first angular position thereof through said passage and said recesses when said flanges are aligned with said recesses, respectively, but said securing means, upon being rotated thereafter by a predetermined angle to a second angular position is restrained from slipping out from said passage in one direction by said flanges abutting said press-plate.

4,475,452

BARK PROCESSING MACHINE

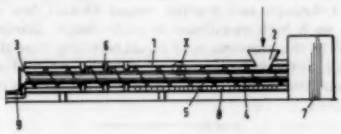
Klaus Koch, Laatzen, and Gerhard Syrbius, Grossburgwedel, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany

Filed May 17, 1983, Ser. No. 495,257

Claims priority, application Fed. Rep. of Germany, May 21, 1982, 3219089

Int. Cl.³ B30B *9/06*

U.S. Cl. 100—117 **9 Claims**



1. Apparatus for dewatering a feed material, comprising:

(a) a cylindrical tube, and means for feeding and discharging material to be dewatered to and from said tube;

(b) a rotatable screw mounted in said tube, and means for driving said screw;

(c) helical means mounted on the periphery of said screw and defining with the inner wall of said tube an elongated helical chamber around said screw through which said material is conveyed and put under pressure, said helical means comprising a helical base member rigidly secured to said screw and extending radially outwardly therefrom, and a plurality of interchangeable, exteriorly curved and highly wear-resistant helical segments secured to said helical base member, whereby said helical segments when worn during operation of said apparatus can be readily replaced to present a fresh helical surface;

(d) teeth means projecting into the interior of said chamber for aiding pressure build up in said chamber, said helical means being formed with openings corresponding to the location of said teeth to permit rotation of said screw, and

(e) apertures formed in said tube for permitting water pressed from said material to be drained from said chamber.

4,475,453

LIQUID-SOLID SEPARATION UTILIZING PRESSURE ROLLS COVERED WITH ELASTOMERIC LAYERS

Steven Davis, Farmington, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah

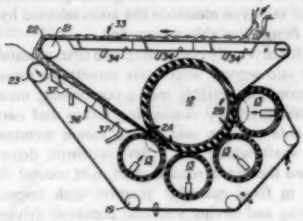
Continuation-in-part of Ser. No. 234,610, Feb. 17, 1981, abandoned. This application Jan. 26, 1982, Ser. No. 341,728

Int. Cl.³ B30B *5/04*

U.S. Cl. 100—118 **63 Claims**

1. An apparatus for expressing the liquid phase from a wet

mixture comprising: a frame, a cylindrical primary roll rotatably mounted to said frame, a plurality of cylindrical pressure rolls, means for rotatably mounting the pressure rolls to the frame such that said pressure rolls are parallel to said primary roll and mounted for rotation adjacent the primary roll in circumferentially spaced relationship about said primary roll, separate means for individually pressing each of said pressure rolls against said primary roll, an endless filter belt, means for



circulating the belt around part of said primary roll to convey the wet mixture successively into the nips between said primary roll and each of said pressure rolls, and said primary roll and at least the upstream one of said pressure rolls each having a layer of elastomeric material on its outer surface adapted to substantially deform under pressure, and the means for individually pressing the upstream pressure roll against the primary roll exerting a preselected biasing force to subject the wet mixture to a relatively gradual rate of increase in pressure.

4,475,454

CONTAINER FOR RECEIVING RUBBISH

Ludwig Sendl, Peissenberg, and Hans Singer, Unterammergau, both of Fed. Rep. of Germany, assignors to BHS Bayerische Berg-, Hutten-und Salzwerke Aktiengesellschaft, Munich, Fed. Rep. of Germany

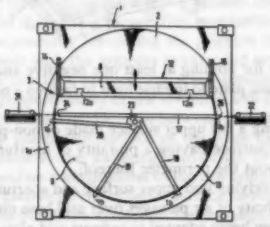
PCT No. PCT/DE81/00176, § 371 Date May 10, 1982, § 102(e) Date May 10, 1982, PCT Pub. No. WO82/01343, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 20, 1981, Ser. No. 380,730

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039497; Aug. 25, 1981, 8124754[U]

Int. Cl.³ B30B *15/06*

U.S. Cl. 100—229 A **19 Claims**



1. A container for receiving rubbish and for mating with a rubbish injector device provided with a hopper and a ram, said container comprising a closure plate for closing an opeing at one end of said container through which the rubbish is received, wherein the closure plate includes:

A. a vertically movable upper part for removably closing an upper area of the container opening to be maintained open above the ram when rubbish is injected into the container by the ram; and

B. a horizontally movable lower part for removably closing a lower area of the opening through which the rubbish is injected by the ram.

4,475,455

TUBULAR STENCIL UNIT FOR SCREEN PRINTING

Mathias Mitter, Falkenstr. 57, 4815 Schloss Holte, Fed. Rep. of Germany

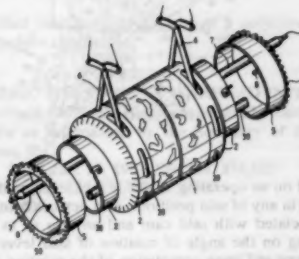
Division of Ser. No. 182,325, Aug. 28, 1980, Pat. No. 4,383,481. This application Oct. 22, 1982, Ser. No. 435,896

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936003

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ B41L *13/04*

U.S. Cl. 101—116 **3 Claims**



1. In a screen printing machine, the combination of a hollow tubular stencil having spaced apart axial end portions; a one-piece end ring directly connected to each of said end portions and coaxial with the respective end portion, each of said end rings including a circumferentially complete wall having a plurality of openings elongated in the circumferential direction provided in and fully surrounded by the material of the respective wall, said openings each being of a constant fixed size which does not vary during operation of the machine; a ring member releasably and rigidly secured to each end ring; drive means for rotating said stencil by way of at least one of said ring members; and a squeegee installed in the interior of said stencil, said squeegee being accessible to the working ends of tools which are insertable into the interior of the respective end rings by passing through the openings in said end rings in a direction substantially radially of the respective end portions so that such tools can engage said squeegee and support it for movement relative to said stencil or vice versa.

4,475,456

OFFSET PERFECTING PRESS

Koji Ishii; Takahiko Shinmoto; Kenso Maehara, and Yoshinori Honkawa, all of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed May 25, 1983, Ser. No. 497,991

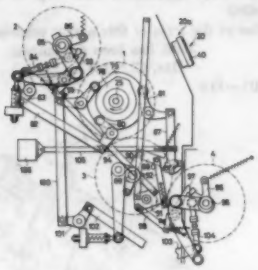
Claims priority, application Japan, May 27, 1982, 57-91066

Int. Cl.³ B41F *7/12, 13/20, 13/28, 21/08*

U.S. Cl. 101—144 **11 Claims**

1. A perfecting press, comprising; a first rubber cylinder, a first plate cylinder movable toward and away from said first rubber cylinder, a second rubber cylinder also serving as an impression cylinder, a second plate cylinder movable toward and away from said second rubber cylinder, a paper feeder, a paper discharger, a first moistening device, a first inking device, a first blanket cleaning device, a second moistening device, a second inking device, a second blanket cleaning device, a first plate feeder, a first plate ejection device, a second plate feeder, a second plate ejection device, a first and a second image adjusting device, an operating lever device, and a second printing control device, said first image adjusting device comprising means for rotating said first plate cylinder, includ-

ing a gear transmission, for enabling vertical adjustment, and for causing said first plate cylinder to slide axially for enabling transverse adjustment, said second image adjustment device comprising means for rotating said second rubber and plate cylinders, including a second gear transmission, for enabling vertical adjustment, and for moving a paper aligning mechanism on a feeder board transversely for enabling transverse adjustment, said operating lever device comprising an operating lever movable to a plurality of positions by a set cam



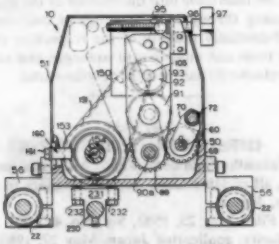
provided on an operating shaft for said lever, said lever being holdable in any of said positions, said devices being operationally associated with said cam and an arm so as to function depending on the angle of rotation of said lever, a solenoid being energized upon completion of the printing operation to cause said lever to return progressively to its initial position in accordance with the rotation of said first rubber cylinder to operate at least said blanket cleaning and plate ejection devices.

4,475,457

ROLLER MARKER

Charles F. Davison, Downers Grove, Ill., assignor to Norwood Marking & Equipment Co., Inc., Downers Grove, Ill.

Filed Jul. 20, 1982, Ser. No. 400,097
Int. Cl.³ B41F *5/04*
U.S. Cl. 101—228 **9 Claims**



1. A rotary head imprint marker comprising a housing, an input shaft to said housing, an output shaft from said housing and being parallel to said input shaft, a rotary marker head affixed to said output shaft exterior of said housing for rotation with the output shaft, and said head carrying type means adapted for marking on selected areas at spaced intervals along a traveling workpiece during the rotations of said head, and comprising:

drive train means within said housing between said imput shaft and said output shaft whereby said output shaft is driven by said input shaft, and said drive train means including:

first, adjustable means movable longitudinally along said input shaft for advancing or retarding the relative rotary angular position of the output shaft with respect to said input shaft and thereby effecting corresponding advancing or retarding of said type means and determining the longitudinal locations of the selected areas marked by said type means on the traveling workpiece;

second, selectively presettable means for selectively varying the speed of said output shaft during a portion of each revolution of said output shaft with respect to the speed of revolution of said input shaft, so that the speed of revolution of said head and type means is coordinated with the speed of the traveling workpiece at each marking of said type means on the areas selected by means of said first, adjustable means; and

means for drivingly connecting said first, adjustable means with said second, selectively presettable means;

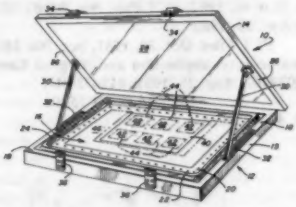
said second, presettable means comprising: means driven by said drivingly connecting means and carried by a movable bracket, said driven means terminating in a first shaft which has a first eccentric drive member affixed thereto, a second shaft, said second shaft being held in fixed rotatable position with respect to said housing and having a second eccentric driven member affixed thereto, a drive connection between said first eccentric drive member and said second eccentric driven member, the position of said first shaft being variable with respect to said second shaft by selective adjustment movement of said bracket.

4,475,458

VACUUM FRAME FOR OFFSET PRINTING PLATES

Joseph F. Kennell, 15 Lakeview Dr., and Gerald W. Clemens, 116 Notre Dame Ave., both of East Peoria, Ill. 61611

Filed Jun. 2, 1983, Ser. No. 500,322
Int. Cl.³ B41F *27/00*
U.S. Cl. 101—382 MV **6 Claims**



1. A frame for holding at least one negative and a plate for exposure of said plate to intense light to fashion a printing plate comprising:

a base having a flat upper surface made of non-porous material, said surface having a plurality of apertures only disposed about the perimeter thereof;

a screen overlying said upper surface and apertures to define a multiplicity of air passages over said base upper surface, said screen being adapted to support said plate and at least one negative superposed thereon and defining a network of small air passages which provide paths for air to flow from all regions of said upper surface covered by the screen to said peripheral apertures;

a flexible, transparent cover adapted to overlie said screen, plate, negative and engaging said base surface about said screen; and

means to evacuate air through said air passages and said apertures whereby said cover, negative and plate are closely held against said screen and upper surface for exposure of said plate.

4,475,459
IMPRESSION CYLINDER FOR SHEET-FED ROTOGRAVURE PRESSES

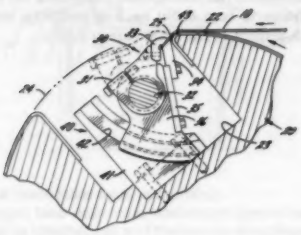
Johannes Wanke, Offenbach am Main; Kurt Difflipp, Dietzenbach, and Jürgen Ruh, Heusenstamm, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,458

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049067

Int. Cl.³ B41F *13/18, 21/04*

U.S. Cl. 101—410 **12 Claims**



1. In an impression cylinder construction for use in a sheet-fed rotogravure press or the like in which the plate cylinder has a substantially continuous outer surface free of any substantial gap comprising, in combination, a frame, an impression cylinder having an axial groove in the surface thereof, the groove having a trailing edge, gripper supporting brackets spaced along the groove, gripper pads on the respective brackets positioned adjacent and inwardly of the trailing edge of the groove, a gripper shaft extending axially in the groove and journaled in the gripper brackets, the gripper shaft having secured thereto a spaced set of grippers rockable with the gripper shaft between open and closed positions with respect to the pads for gripping the leading edge of a sheet, mounting means in the groove and secured to the cylinder for mounting the brackets for swinging movement between (1) an extended position in which the grippers extend outwardly of the cylinder surface to define a sheet entry way which is substantially flush with the cylinder surface and oriented to receive sheets fed in the same direction as the axial groove moves as the impression cylinder is rotated, and (2) a retracted position in which the brackets are swung inwardly with respect to the groove, and means including a spring pressed cam follower at the end of the shaft and a cooperating cam surface fixed to the frame for sequentially (a) closing the grippers on the leading edge of a sheet with the grippers in extended position and (b) moving the brackets to their retracted position thereby to retract the grippers totally below the surface of the impression cylinder to preclude interference between the grippers and the substantially continuous surface of the plate cylinder as the cylinders revolve, the swinging movement of the brackets being centered on a longitudinal swing axis lying at the trailing edge of the groove on the cylinder surface thereby eliminating binding of the fed sheets against the trailing edge of the groove.

4,475,460
PROCESS FOR DESENSITIZING LITHOGRAPHIC PRINTING PLATES

Hiroshi Matsumoto, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

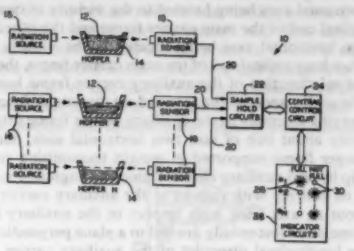
Filed Oct. 5, 1983, Ser. No. 539,212

Claims priority, application Japan, Oct. 5, 1982, 57-175197

Int. Cl.³ B41N *3/08*

U.S. Cl. 101—465 **6 Claims**

1. A process for desensitizing a lithographic printing plate having a hydrophilic non-image area and a lipophilic image area comprising coating said plate with a desensitizing gum comprising an aqueous solution containing a film-forming



starch modified with polyoxyethylene or a polyoxyethylene-polyoxypropylene copolymer.

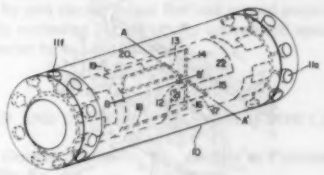
4,475,461
MONOLITHIC MULTI-POINT WARHEAD INITIATOR

Robert R. Durrell, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 17, 1981, Ser. No. 274,605

Int. Cl.³ F42C *19/00*

U.S. Cl. 102—200 **12 Claims**



1. In an elongated warhead initiator system fitted with a plurality of booster pellets arranged around the outside circumferential area of the warhead initiator with a centrally located detonator means, the improvement comprising a monolithic, unitary initiation network with initiation material located in a first lateral groove that interfaces contiguous with and adjacent to each said booster pellet and a plurality of vertical conduits and lateral grooves that connect the first lateral groove to a single detonation input conduit located in the midsection of the warhead.

4,475,462
TILTABLE HANGER APPARATUS

Masahiro Tsumaki; Toshihiko Fujii; Hideaki Kamiya; Haruo Suzuki, and Yoshihiro Goto, all of Zama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 19, 1982, Ser. No. 350,197

Claims priority, application Japan, Mar. 19, 1981, 56-39920

Int. Cl.³ B61B *3/00*

U.S. Cl. 105—149 **2 Claims**

1. A tiltable hanger apparatus comprising, in combination,

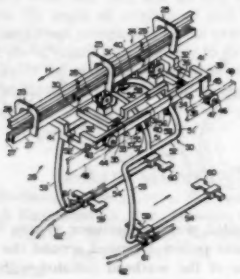
a continuously extending overhead track assembly;

a work-carrying assembly movable below and along the overhead track assembly and having a fore-and-aft direction susbstantially parallel with the overhead track assembly, the work-carrying assembly comprising (a) a main carrier frame suspended from the overhead track assembly and having a predetermined attitude below and with respect to the overhead track assembly, (b) an auxiliary carrier frame disengageably supported in weight transmitting relationship by said main carrier frame and having a longitudinal direction substantially parallel with the fore-and-aft direction of the work-carrying assembly, the auxiliary carrier frame being arranged to be tiltable with respect to the main carrier frame in a fore-and-aft direction

of the work-carrying assembly selectively about one of two horizontal axes perpendicular to the longitudinal direction of the auxiliary carrier frame, one of the two horizontal axes being located in the vicinity of one longitudinal end of the main carrier frame and the other of the two horizontal axes being located in the vicinity of the other longitudinal end of the main carrier frame, the longitudinal direction of the auxiliary carrier frame being tiltable with respect to the fore-and-aft direction of the work-carrying assembly as the auxiliary carrier frame tilts selectively about one of said two horizontal axes, and (c) a hanger frame supported in weight transmitting relationship by said auxiliary carrier frame and angularly movable in its entirety with respect to the auxiliary carrier frame about an axis fixed with respect to the auxiliary carrier frame and substantially normal to a plane perpendicular to the longitudinal direction of the auxiliary carrier frame, said hanger frame having portions adapted to have a workpiece supported thereon;

first guide means arranged to cause said auxiliary carrier frame to tilt with respect to said main carrier frame in a fore-and-aft direction of the work-carrying assembly selectively about one of said two horizontal axes; and

second guide means with which said hanger frame is held in engagement, the second guide means being arranged to cause said hanger frame to angularly turn with respect to said auxiliary carrier frame about said axis of angular movement of the hanger frame,



said overhead track assembly extending in a substantially horizontal direction and said first guide means comprising at least two guide rails each partially extending in parallel with said overhead track assembly and partially slanting vertically with respect to the track assembly, at least one guide roller carried by said auxiliary carrier frame in the neighborhood of one longitudinal end of the auxiliary carrier frame and engageable with one of said guide rails, and at least one guide roller carried by said auxiliary carrier frame in the neighborhood of the other longitudinal end of the auxiliary carrier frame and engageable with the other of said guide rails, each of the guide rollers being rotatable on each of said guide rails about an axis fixed with respect to said auxiliary carrier frame in a lateral direction of said work-carrying assembly,

said main frame having at least two carrier members having substantially circular cross sections and extending in lateral directions of said work-carrying assembly, said carrier members consisting of a carrier member located in the neighborhood of one longitudinal end of the main carrier frame and a carrier member located in the neighborhood of the other longitudinal end of the main carrier frame, said auxiliary carrier frame being disengageably supported in weight transmitting relationship on said carrier members and being angularly movable selectively about each of the axes located at the upper ends of the two carrier members and parallel with the center axes of the carrier members, respectively,

wherein said main carrier frame has at least two guide plates located in the neighborhood of the opposite longitudinal ends, respectively, of the main carrier frame and each formed with a slot and wherein said auxiliary carrier frame has at least two guide pins extending in lateral directions of the work-carrying assembly and axially extending through said slots, respectively the slot in one of the guide plates is arcuately curved about one of said two horizontal axes and the slot of the other guide plate is arcuately curved about the other of the two axes, said guide pins engaging said main carrier frame substantially in non-weight-transmitting relationship thereto and precluding the auxiliary carrier frame from being disengaged from the main carrier frame while permitting the auxiliary carrier frame to turn about each of said two horizontal axes with respect to the main carrier frame.

4,475,463

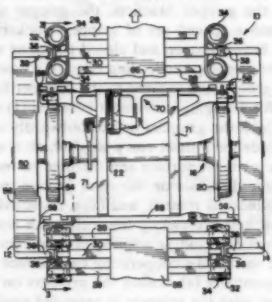
SINGLE AXLE TRUCK TRANSOM ASSEMBLY

Lynn K. Tilly, Allison Park, Pa., and Richard G. Schwartz, Munster, Ind., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 431,218

Int. Cl.[3] **B61F** *3/00, 5/22, 5/24*

U.S. Cl. 105—208 **2 Claims**

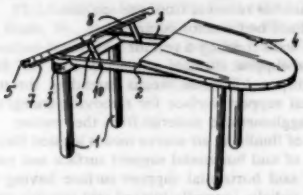


1. A railway car truck comprising a pair of laterally spaced side frames, a plurality of longitudinally spaced transom means including a top wall and a bottom wall extending between said side frames, and means connecting said transom means to said side frames, said connecting means including bracket means projecting from said side frames having a first notch means along an upper edge of said bracket and a second notch means along a lower edge of said bracket, and lug means provided on said ends of said transom means interlockingly engageable within said notch means, said lug means including a first longitudinally projecting arm connected to said transom top wall, a second arm downwardly dependent from said first arm, and a land means longitudinally depending from said bottom wall, said first arm being seatable in said first notch means with said depending arm overlying said transom and said land means being seatable in said second notch means of said bracket means when said transom means is connected to said bracket means, and a weld means fixing said lug means within said notch means.

4,475,464
EXPANDABLE TABLE WITH PIVOTAL PANELS FLANKING REMOVABLE LEAF

Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation, Grenoble, France

Continuation-in-part of Ser. No. 147,739, May 8, 1980,. This application Sep. 28, 1982, Ser. No. 425,859
Claims priority, application France, May 10, 1979, 79 12513
Int. Cl.³ A47B 1/02
U.S. Cl. 108—83 10 Claims



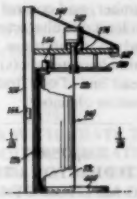
1. An extendable table comprising:
a legged base defining a horizontal support surface extending in longitudinal and transverse directions and having a pair of outer transversely extending edges;
a first table panel resting on the surface and having a transversely extending inner edge intermediate and generally parallel to the outer edges;
a second table panel restable on the support surface, having a transversely extending inner edge buttable with the inner edge of the first panel, and formed with a pair of transversely open and longitudinally extending guides;
respective elements on the base underneath the second panel, defining a transversely extending first pivot axis, and extending transversely into guiding engagement with the guides, whereby the second panel can slide longitudinally relative to the base on the elements and can be pivoted on the elements about the first pivot axis;
a pair of parallel links each having one end pivoted about a second transverse axis on the base and generally parallel to the first transverse axis and another end pivoted on the second panel about another transverse axis, whereby the second panel can move with simultaneous pivoting about the first axis and sliding perpendicular thereto between an inner position with its inner edge butting the inner edge of the first panel and an outer position with its inner edge spaced from the inner edge of the first panel; and
a leaf engageable in the outer position of the second panel between the inner edges.

4,475,465
TRANSACTION SECURITY SYSTEM AND MODULAR TRANSACTION PROCESSING CENTER

Otis H. Hastings, Mahwah, N.J., assignor to Transaction Security, Inc., Montvale, N.J.

Continuation of Ser. No. 952,782, Oct. 19, 1978, Pat. No. 4,348,966, which is a division of Ser. No. 827,593, Aug. 25, 1977, Pat. No. 4,121,523, which is a continuation-in-part of Ser. No. 602,404, Aug. 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 827,174, Aug. 16, 1977, abandoned. This application Apr. 26, 1982, Ser. No. 371,923
The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.
Int. Cl.³ E05G 5/00
U.S. Cl. 109—2 11 Claims

1. A personnel entry means comprising two accurate shields, a first shield defining an arc of about 180° and a second shield defining an arc of about 90° to 135° mounted for rotation concentrically about a common axis to provide sequentially for movement between first, second and third primary positions relative to each other and about an object passing through the perimeter defined by the path of rotation of said shields: said shields being adapted to provide a concentric arc in said first position, in which, in combination, the arc defined thereby does not exceed about 180° while occluding the passage spanned by and behind said shields, barring access thereto to the occupant within said perimeter: said first shield being adapted to rotate to said second position, where in said latter position, one lateral border of each of said shields is in registry with the other of said shields defining a closed area about said perimeter that is equal to the sum of the arcs defined by both of said shields: said shields in this latter position continuing to

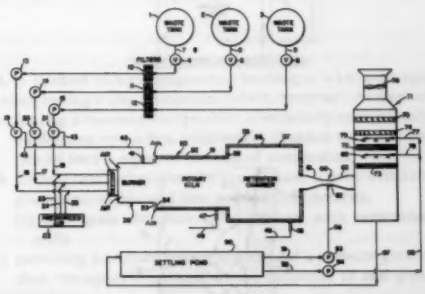


occlude the passage spanned thereby in said first position: said shields being adapted further to rotate to said third position in which said shields are arrayed concentrically on the side of said perimeter opposite to that of said first position and in which said shields define an arc not in excess of about 180° while providing by movement of both of said shields in arcuate paths about said perimeter unimpeded passage into the space occluded by said shields in said first and second positions; and completely occluding the previously unoccluded space about said perimeter in said third position.

4,475,466
BURNER AND INCINERATOR SYSTEM FOR LIQUID WASTE

David A. Gravely, Louisville, Ky., assignor to Pyrochem, Inc., Louisville, Ky.

Filed Feb. 19, 1982, Ser. No. 350,534
Int. Cl.³ F23G 7/04
U.S. Cl. 110—238 27 Claims



1. A burner for combustion of liquid wastes comprising:
wall means forming a combustion chamber, said combustion chamber having an outlet opening for emission of combustion products;
means for injecting first, second and third waste liquids into said combustion chamber as separate unconfined streams, said injection means comprising first, second and third spaced apart injectors positioned outside of said combustion chamber, said injectors being oriented so that the axes of said waste streams define a substantially conical surface and converge substantially at the apex of said conical surface, said apex lying within said combustion chamber and said waste streams mixing in the area of said apex;
means for introducing said first, second and third waste

liquids to said first, second and third injectors, respectively, said first liquid having a BTU value below that required for combustion, said second liquid having a BTU value at least high enough to support combustion, and said third liquid having a BTU value significantly greater than that of said second liquid;

means for supplying combustion-supporting gas to said combustion chamber;

pilot means for igniting said waste mixture; and,

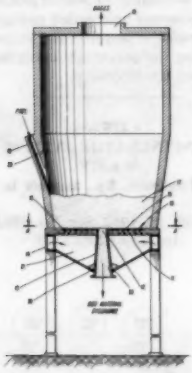
control means for controlling relative to each other the rates of injecting said first and third waste liquids into said combustion chamber, said control means including means for measuring at least one characteristic of the combustion products related to combustion conditions and means responsive to said characteristic(s) for controlling the rate of injecting at least one of said first and third waste liquids into said combustion chamber.

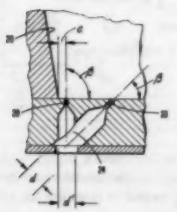
4,475,467

FLUIDIZED BED REACTOR UTILIZING A PLATE SUPPORT AND METHOD OF OPERATING THE REACTOR

Jakob Korenberg, York, Pa., assignor to York-Shipley, Inc., York, Pa.

Filed Feb. 12, 1982, Ser. No. 348,249
Int. Cl.³ F23G 7/00
U.S. Cl. 110—245 **20 Claims**





1. A bed support for use in a fluidized bed reactor comprising:

a horizontal support surface;

centrally disposed conduit means extending through said horizontal support surface for removing tramp material and/or agglomerated material from the reactor;

a plurality of fluidizing air source means located throughout the area of said horizontal support surface and extending through said horizontal support surface having orifices directed radially inwardly toward said conduit means for directing pressurized air through said orifices into the bed at an acute angle to said horizontal support surface and toward said conduit means for moving said tramp material and/or agglomerated material toward said conduit means for removal from the reactor; and

peripheral fluidizing air source means comprising a plurality of jet nozzles with each jet nozzle containing two orifices, one orifice directing pressurized air substantially vertically into the reactor and the other orifice directing pressurized air into the bed at an angle for moving said tramp material and/or agglomerated material toward said conduit means for removal from the reactor.

11. A fluidized bed reactor comprising:

peripheral walls forming a reactor bed;

a horizontal support surface;

centrally disposed conduit means extending through said horizontal support surface for removing tramp material and/or agglomerated material from the reactor;

a plurality of fluidizing air source means located throughout the area of said horizontal support surface and extending through said horizontal support surface having orifices directed radially inwardly toward said conduit means for directing pressurized air through said orifices into the bed at an acute angle to said horizontal support surface and toward said conduit means for moving said tramp material and/or agglomerated material toward said conduit means for removal from the reactor;

chamber means located below said horizontal support surface and in fluid communication with said fluidizing air source means;

means to supply pressurized air to said chamber means; and

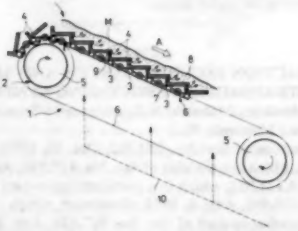
peripheral fluidizing air source means comprising a plurality of jet nozzles with each ject nozzle containing two orifices, one orifice directing pressurized air substantially vertically into the reactor and the other orifice directing pressurized air into the bed at an angle for moving said tramp material and/or agglomerated material toward said conduit means for removal from the reactor.

4,475,468

INCINERATOR WITH MOVING-BED STOKER

Tokihiko Ishikawa, Yokohama, and Takehiko Motomura, Funabashi, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Japan

Filed May 16, 1983, Ser. No. 494,934
Int. Cl.³ F23G 5/00
U.S. Cl. 110—257 **2 Claims**



1. In an incinerator, a movable-bed stoker comprising a chain conveyor having links thereon and inclined at an angle in a direction of its movement, means for moving said conveyor, and a plurality of fuel- or fire-bed members pivotably mounted on said links so as to cover said links, whereby a movable fuel- or fire-bed movable in unison with said chain conveyor is defined, each fuel- or fire-bed member being L-shaped in cross-section and comprising a horizontal plate and a vertical plate, said members being pivotable during movement of the conveyor so that a horizontal plate of one fuel- or fire-bed member will engage with the vertical plate of an adjacent fuel- or

fire-bed member, and combustion air injection holes formed only through the vertical plates of said fuel- or fire-bed members, the vertical plate of each fuel- or fire-bed member extending upwardly from an upstream edge of the horizontal plate thereof, and notches being formed at an upper edge of said vertical plate, said combustion air injection holes being formed when the horizontal plate of a succeeding or upstream fuel- or fire-bed member engages the upper edge of the vertical plate of a preceding or downstream fuel- or fire bed member.

4,475,469

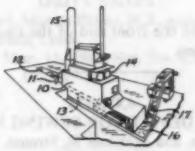
PULSATING INCINERATOR HEARTH

John N. Basic, Sr., 21 W 161 Hill St., Glen Ellyn, Ill. 60137

Continuation-in-part of Ser. No. 248,054, Mar. 27, 1981, Pat. No. 4,438,705. This application Mar. 29, 1982, Ser. No. 362,853

Int. Cl.³ F23N *7/08*

U.S. Cl. 110—281 **57 Claims**



1. In a hearth for an incinerator, the improvement comprising a fixed suspension frame and a superstructure suspended from said frame for limited arcuate movement of said superstructure relative to said frame, said superstructure including a central area thereon adapted to receive a pile of burning particles, and means for stroking and stopping movement of said superstructure relative to said frame to compel movement of said particles when arranged on said burning area responsive to each stroking and stopping of said superstructure, said superstructure having a yoke extending from one side thereof and said frame having a beam on each of opposed sides of said yoke defining predetermined positions for stroking and stopping movement of said superstructure relative to said frame.

4,475,470

SUSPENDED ROOF CONSTRUCTION FOR INDUSTRIAL FURNACES

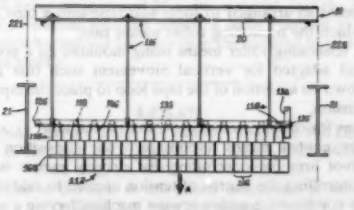
Frank P. Merkle, Hanover, Ill., assignor to Merkle Engineers, Inc., Galena, Ill.

Continuation-in-part of Ser. No. 344,515, Feb. 1, 1982, Pat. No. 4,424,756. This application Jan. 10, 1983, Ser. No. 456,629

The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.

Int. Cl.³ F23M *5/02*

U.S. Cl. 110—332 **24 Claims**



1. In suspended roof construction for high temperature furnaces having a plurality of roof panel modules suspended from roof support beams, each said panel module comprising: at least one panel module support beam of a length spanning the transverse distance between said roof support beams; frame suspension means depending downwardly from said panel module support beam(s); refractory support frame suspended by said frame suspension means, said refractory support frame comprising at least two substantially parallel support members at least one end of said support members comprising extension and retraction means comprising pivot means forming an extendable and retractable refractory support frame end portion, said frame end portion in retracted position allowing passage of said refractory support frame between adjacent roof support beams and in extended position providing refractory brick suspension beneath said roof support beams to a proximity to an adjacent roof panel module; and carrier refractory bricks suspended from said refractory support frame, said carrier refractory bricks supporting adjacent filler bricks.

4,475,471

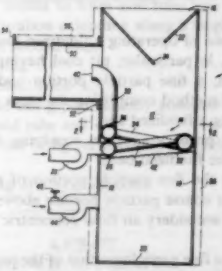
BIO-MASS BURNER WITH GRATE THEREFOR AND METHOD OF OPERATION

Calvin H. Hand, Jr., Rte. #3, Box 407, Tappahannock, Va. 22560; David J. Hand, Rte. #1, Box 140A, Warsaw, Va. 22572, and John A. Careatti, Howertons, Va., assignors to Calvin H. Hand, Jr.; David J. Hand; Herbert Mulqueen, Jr. and Stan Abrams, all of Tappahannock, Va.

Division of Ser. No. 351,267, Feb. 22, 1982, Pat. No. 4,295,956, which is a division of Ser. No. 159,226, Jun. 13, 1980, Pat. No. 4,341,199. This application May 31, 1983, Ser. No. 499,488

Int. Cl.³ F23B *5/00*; **F23K** *3/00*

U.S. Cl. 110—345 **2 Claims**



1. A method of high temperature burning of a bio-mass fuel product having a low ash content which comprises the steps of

a. feeding a bio-mass fuel product substantially continuously on demand into a first combustion chamber such that the rate of feed is equal to the rate of combustion,

b. feeding said fuel product by gravity onto a grate structure positioned within said first combustion chamber,

(1) said grate structure being hollow with nonporous walls,

c. providing a primary source of air under a pressure greater than atmospheric pressure to the underside of said grate structure,

d. establishing a flow of unburned products of combustion from said first combustion chamber to a second combustion chamber,

e. providing a secondary source of air in said second combustion chamber with said secondary air being heated sufficiently to cause re-ignition of any unburned products of combustion in said second combustion chamber,

f. superheating said secondary source of air by initially passing said secondary air through said hollow, nonporous grate structure in said first combustion chamber,

g. and then delivering said superheated secondary source of air to said second combustion chamber through venturi tube means.

4,475,472

METHOD AND APPARATUS FOR OPERATING A VORTEX BED FURNACE

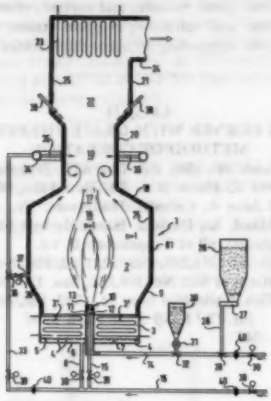
Fritz Adrian, Ratingen, and Boris Dankow, Essen, both of Fed. Rep. of Germany, assignors to Steag Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 402,156

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130802

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 30 Claims



1. A method of operating a fluidized bed furnace with pulverized fuel, in particular, pit coal having, as a result of its pulverization, a fine particle portion and a coarse particle portion, said method comprising the steps of:

establishing a fluidized bed;

blowing a primary air flow supplying the pulverized fuel above the fluidized bed;

separating the fine particle portion of the pulverized fuel from the coarse particle portion above the fluidized bed;

blowing a secondary air flow concentric to said primary air flow;

burning the fine particle portion of the pulverized fuel above the fluidized bed in a flame defined by the two air flows; and

allowing the coarse particle portion to fall into the fluidized bed for combustion.

4,475,473

HAND-HELD EMBROIDERY MACHINE

Constantin Samoilov, 285 Brandywine Ct., and Miguel N. Samoilov, 1100 Orchard La., both of Woodburn, Oreg. 97071

Filed Sep. 16, 1982, Ser. No. 419,013

Int. Cl.³ D05C *23/00*

U.S. Cl. 112—80 15 Claims

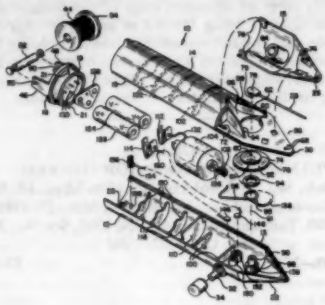
1. A hand-held, self-powered generally cylindrical embroidery machine comprising:

a casing having a front end and a rear end;

an embroidery needle drive means mounted within said casing, said drive means including a prime mover and a drive train positioned forwardly of the prime mover for driving the point of an embroidery needle in a closed, generally elliptical path;

needle-mounting means for connecting an embroidery needle to said drive train so that the point of said needle protrudes from said front end;

the casing comprising an elongated cylinder including a cylindrical gripping portion rearwardly adjacent the needle and sized to fit within a user's hand between the thumb and index finger and a finger-actuable switch means positioned adjacent the front end of the casing for operating the drive means.



4,475,474

METERING DEVICE FOR SEWING MACHINES

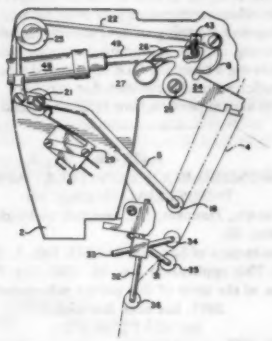
Wolf R. von Hagen, and Johannes K. Strauss, both of Hemmingen, Fed. Rep. of Germany, assignors to Union Special G.m.b.H, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1982, Ser. No. 434,458

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1981, 3142195

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.26 16 Claims



1. A tape feeding system for a sewing machine, comprising:

a plurality of rotative members for guiding a tape including drive roller means, tensioning roller means and idler roller means so arranged to form said tape into a tape loop in which the tensioning roller means ride;

said tensioning roller means being mounted on a pivot arm and adapted for vertical movement such that it bears down on a portion of the tape loop to place the tape under tension;

means for driving said drive roller means; and

motor control means responsvie to the disposition of said pivot arm for controlling the driving means whereby controlling the degree of tension applied to said tape.

6. In combination with a sewing machine having a supporting arm for a stitching mechanism, a mechanism for feeding elastic tape to the stitching mechanism, said mechanism comprising:

elastic metering means mounted on said sewing machine for advancing a longitudinally elastic strip;

means arranged following the elastic metering means in the direction of tape advancement for creating a distended elastic tape loop including means for longitudinally stretching the tape arranged in said loop; and

means for controlling the amount of stretch applied to the tape arranged in the tape loop.

11. Apparatus for feeding an elastic tape to a machine, comprising:

tape feeding means;

means arranged to receive and guide the tape fed by said tape feeding means along a predetermined path of travel;

stretching means arranged in the predetermined path of the tape for applying tension thereto; and

tape tension responsive switch means for controlling the tape feeding means as a function of the desirable tension to be applied to said tape.

4,475,475

GEAR ATTACHING ARRANGEMENT FOR LOOPTAKER DRIVE SHAFT

Thaddeus J. Zylbert, Morris Plains, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 11, 1983, Ser. No. 474,220
Int. Cl.³ D05B *57/32*
U.S. Cl. 112—228 **4 Claims**

1. In combination, a looptaker for a sewing machine, a hollow drive shaft for the looptaker depending therefrom, a spindle rotatable within the hollow drive shaft, a sleeve on the hollow shaft with a slit extending throughout the length thereof and including an interior flat surface in engagement with an exterior flat surface provided on the drive shaft to prevent relative rotation of the sleeve and shaft, and a gear affixed to the sleeve with a set screw extending through the gear and bearing against an exterior surface on the sleeve to contract the entire sleeve about the drive shaft, the looptaker and shaft being integral and of a cast material, and the sleeve being of a resilient material which is more resistant to local deformation by applied pressure than the material of said looptaker and shaft.

4,475,476

SIGNAL STAFF FOR A PERSON IN THE WATER

Thomas L. Howard, 1972 Scudder Dr., Akron, Ohio 44320

Filed Aug. 10, 1981, Ser. No. 291,434
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ G09F *17/00*
U.S. Cl. 116—210 **6 Claims**

1. An emergency signalling device for use with a life jacket, comprising:

(A) an elongate, relatively thin, unitary, extruded, flexible tube having first and second ends and constructed of relatively thin, flexible but nearly inextensible material;

(B) a signal light attached to said first end;

(C) a water activated battery

(1) disposed on said tube and

(2) operatively connected to said signal light;

(D) means for selectively actuating said battery;

(E) said tube being collapsible for storage within a pocket of the life jacket;

(F) said second end of said tube comprising a mouthpiece and one-way valve means attached thereto comprising a

flattened tube of thin, flexible plastic openable by air pressure whereby said tube may be inflated by blowing into said valve means to form said tube into a semirigid elongate configuration extending along a single axis from said first to said second end;

(G) a lanyard having

(1) first and second ends,

(2) said first end being permanently attached to said second end of said tube and

(3) said second end being permanently attached to said life jacket; and

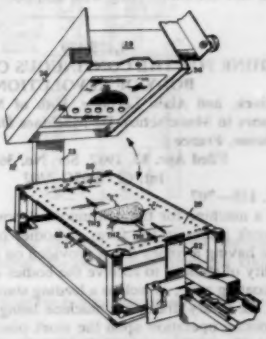
(H) said tube being of a brilliant color.

4,475,477

STENCIL APPARATUS

Albert I. Morse, Beverly, and Robert C. Simmonds, Jr., Topsfield, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Dec. 27, 1982, Ser. No. 451,918
Int. Cl.³ B05C *3/00*
U.S. Cl. 118—406 **14 Claims**



1. A deposition means for allowing a configuration of fusible

powdered material to be deposited on a receiving surface in desired thickness, said deposition means comprising:

an non-permeable planar surface arrangement;

a screen member arranged with said planar surface arrangement;

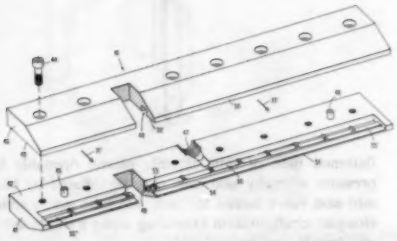
a cut-out pattern disposed in said planar surface arrangement; and a spacing means of non-uniform thickness disposed on the bottom side of said planar surface arrangement, to permit said planar surface arrangement to be spaced from said receiving surface during deposition of powdered material thereon.

4,475,478

COATING APPARATUS

Edward J. Berdinner, Jr., and Jerome P. Throckmorton, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 8, 1983, Ser. No. 483,459
Int. Cl.³ B05C *5/00*
U.S. Cl. 118—413 **5 Claims**



1. In a coating apparatus wherein a substrate passes through an elongated pool of coating liquid, and thereafter emerges with a liquid coating on at least one side of said substrate, the improvement comprising:

an elongated liquid-supply manifold for replenishing coating liquid to said pool, said manifold including at least one input port from supplying liquid to an internal, elongated runner-conduit, and graduated flow-restriction means operable to supply liquid from said runner to spaced portions of said pool; as liquid flows in a direction from said runner-conduit, through said flow-restrictng means, to said pool,

said flow-restriction means comprise a plurality of individual flow-passages of graduated cross-sectional area as measured normal to said direction of flow, and of equal length as measured in said direction of flow, and

said plurality of flow-passages terminating in an elongated slot whereat the individual flows recombine, the outlet of said slot communicating with said pool.

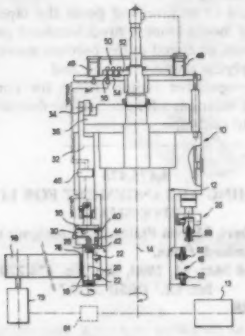
4,475,479

MACHINE FOR THE CONTINUOUS COATING OF A BODY OF REVOLUTION

Jean Rinck, and Alain Lecomte, both of Mulhouse, France, assignors to Manufacture De Machines Du Haut-Rhin S.A., Mulhouse, France

Filed Apr. 13, 1982, Ser. No. 367,876
Int. Cl.³ B05C *7/02*
U.S. Cl. 118—707 **12 Claims**

1. In a machine for the continuous deposition of a coating upon work pieces in the form of bodies of revolution, said machine having a rotary drum provided on its periphery with a plurality of stations to receive the bodies of revolution, and with a coating zone, as well as a feeding station, and means for driving the rotary drum, the machine being adapted to carry out a coating operation upon the work pieces while they are located in the coating zone, such coating zone forming a fixed angular sector around the drum, means mounting the work pieces for free rotation about their axes at least in the coating zone, a guiding guard mounted externally of the drum and having a fixed portion which frictionally drivingly rotates the work pieces in their travel on the drum as the drum rotates, the improvement wherein the guiding guard is constituted in the coating zone by an endless belt which substantially follows the periphery of the drum, and comprising means separate from



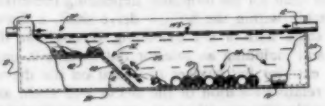
the means which rotatably drives the drum for driving the endless belt to impart to the work pieces rotation about their axes by frictionally driving the work pieces by the belt, the means for driving the endless belt driving it at a speed such that when the drum is stopped, the belt drives the work pieces at a speed near that at which they would have been frictionally driven by the fixed portion of the guiding guard if the drum were rotating at its normal speed.

4,475,480

METHOD AND APPARATUS FOR RAISING SOFTSHELL CRAWFISH

James E. Bodker, Jr., 364 Peachtree Blvd., Baton Rouge, La.

Filed Jan. 7, 1983, Ser. No. 456,395
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—2 **12 Claims**



1. A tank for separating a contained population of premolt-/molting and aggressive feeding crawfish comprising:

a. an aquatic tank having a floor portion and a surrounding peripheral wall, defining an inner liquid holding space;

b. substrate compartment means positioned on the tank floor and covering a portion thereof for encouraging concentration of aggressive, feeding crawfish in a first area of the tank;

c. a second area of the tank which is free of said substrate compartments;

d. separation enhancement means disposed within the confines of said tank for enhancing the separation of premolt-/molting crawfish from the aggressive feeding crawfish contained in the tank so that premolt/molting crawfish can escape the first area and enter the second area more easily than aggressive feeding crawfish; and

e. water supply means for maintaining a volume of water in the tank inner space.

4,475,481

IDENTIFICATION SYSTEM

Gary T. Carroll, Boulder, Colo., assignor to B.I. Incorporated, Boulder, Colo.

Continuation-in-part of Ser. No. 280,341, Jul. 6, 1981, abandoned. This application Oct. 29, 1982, Ser. No. 437,841

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—51 R **18 Claims**

10. A method of feeding animals comprising the steps of:

providing the animal with an attached intermittent single frequency signal transmitting device capable of transmitting a data encoded digital signal indicative of the identify of the animal through a single antenna circuit embodied within said device, said device also being capable of receiving a burst of electromagnetic energy through said single antenna circuit for providing power for said device;

providing a feeder equipped with feed dispensing means, said feeder having signal receiving and decoding means associated therewith;

generating said burst of electromagnetic energy whenever the animal comes in close proximity to the feeder, whereby the device responds by transmitting the encoded signal;

receiving the encoded signal transmitted by the transmitting device within the signal receiving means;

decoding the received signal with said decoding means;

comparing the decoded signal with predetermined identification data in a computer to produce a signal indicative of identity and predetermined feed amount; and

dispensing the predetermined feed amount to the feeder in response to the signal generated by the computer.

4,475,482

SOOTBLOWING OPTIMIZATION

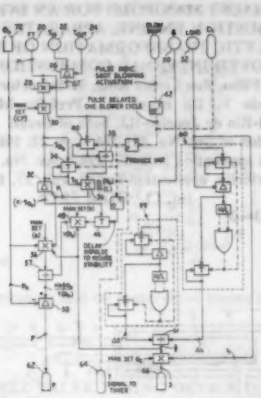
William H. Moss, Concord Township, Lake County; Lawrence Popiel, Sheffield Lake, and Thomas J. Scheib, Chesterland, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 405,840, Aug. 6, 1982, abandoned. This application Jan. 23, 1984, Ser. No. 573,078

Int. Cl.³ F22B *37/48*

U.S. Cl. 122—379 **3 Claims**

1. A method of optimizing cycle time (θ_{opt}) to schedule sootblowing during the operation of a boiler having an input of fluid with a particular specific heat (c_p) to generate steam at a particular cost per unit of heat in the boiler comprising: sensing the input and output temperatures of fluid to and from a boiler to obtain a difference (Δt) of input and output temperatures, sensing a flow rate (m) of the fluid in the boiler during its operation, determining an incremental cost of steam (Φ), with the time for actual sootblowing (θ_c) being known to determine the cost of steam for sootblowing (S), calculating the heat flux (q) of the boiler during its operation according to the equation $q=mc_p\Delta t$, calculating two scaling parameters (K and P) according to the equation $K=q_o(m_{\theta b}/m_o)$ and $P=[K\theta_b/(q_o-q_{\theta b})]-\theta_b$ and using values for T, K, S to calculate the optimum cycle time according to the relationship:



$$\phi = \left[Pn\left[\frac{P+\theta_{opt}}{P}\right] - \frac{P[\theta_{opt}+\theta_c]}{\theta_{opt}+P} - \frac{S}{K\dot{k}\Phi} + \theta_c \right]$$

4,475,483

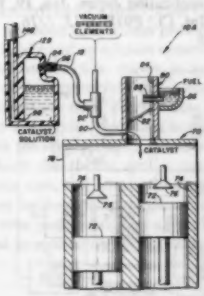
CATALYST DELIVERY SYSTEM

Barnett J. Robinson, 502 Boylston St., Brookline, Mass. 02146

Filed Apr. 15, 1983, Ser. No. 485,439

Int. Cl.³ F02B *75/12*

U.S. Cl. 123—1 A **22 Claims**



1. A system for the delivery of a catalyst containing not more than nine milligrams of rhenium metal per kilogram of fuel to

an internal combustion engine having an intake port for air comprising:

means for dispensing said catalyst in a liquid; and

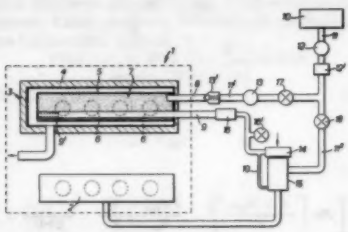
means for passing air via said liquid for absorbing said catalyst into the air.

4,475,484

EXHAUST MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE, APPARATUS FOR THE CATALYTIC TRANSFORMATION OF FUEL AND IMPROVED INTERNAL COMBUSTION ENGINE

Antonio V. Filho, Rua Luther King, 41-Belo Horizonte-MG, and Pietrangelo V. De Biase, Av. Prefeito Mendes Moraes, 1300/401-Rio de Janeiro-RJ, both of Brazil

Continuation of Ser. No. 351,394, Feb. 23, 1982, abandoned. This application Nov. 17, 1983, Ser. No. 552,888
Claims priority, application Brazil, Feb. 27, 1981, 8101247
Int. Cl.³ F02M 25/06
U.S. Cl. 123—3 18 Claims



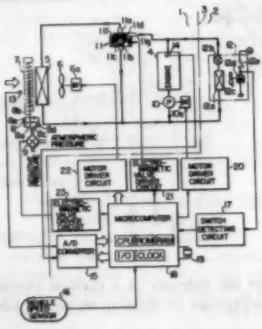
1. Exhaust manifold for an internal combustion engine which comprises a body having a plurality of inlets for mounting over the exhaust orifices of an internal combustion engine, a first chamber in said body in communication with said inlets, and an outlet for the exhaust gases of said engine, and a second chamber in said body in thermal communication with said first chamber, one of said first and second chambers surrounding the other of said chambers, said second chamber being a catalytic reaction chamber having a fuel inlet and an outlet for dissociated fuel in the form of gases, said catalytic reaction chamber containing catalytic material effective for the catalytic conversion of a liquid fuel into a gaseous fuel.

4,475,485

ENGINE COOLING SYSTEM CONTROL APPARATUS

Yoshiyasu Sakakibara, Anjo, and Kelichi Fukumura, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 11, 1983, Ser. No. 457,282
Claims priority, application Japan, Jan. 19, 1982, 57-6937
Int. Cl.³ F01P 5/12, 7/16
U.S. Cl. 123—41.05 10 Claims



1. A cooling system control apparatus for controlling the temperature of cooling water in a water-cooled engine comprising:

a radiator for cooling said engine cooling water;

a motor-driven fan for supplying air to said radiator;

an electrically controlled water pump for circulating said engine cooling water through an engine cooling system circuit including said radiator;

an electrically controlled radiator shutter positioned to open and close an air inlet of said radiator;

electrically-controlled valve means for regulating the amount of said engine cooling water flowing to said radiator;

a water temperature sensor for electrically detecting the temperature of said engine cooling water; and

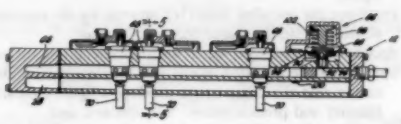
an electronic control unit for receiving at least an electric signal from said water temperature sensor to control the operation of said motor-driven fan, said water pump, said radiator shutter and said valve means in accordance with the temperature of said engine cooling water, such that when the engine cooling water temperature detected by said water temperature sensor rises above a first reference temperature T_1 representing a lowest reference temperature, said water pump is operated, and when said engine cooling water temperature rises above a second reference temperature T_2 higher than said first reference temperature T_1, said radiator shutter is operated to open the air inlet to said radiator, and at substantially said second reference temperature T_2 said valve means opens a water passage to said radiator, and when said engine cooling water temperature rises further exceeding a third reference temperature T_3 higher than said second reference temperature T_2, said motor driven fan is operated.

4,475,486

ENGINE INDUCTION SYSTEM

David R. Kessler, Churchville, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1982, Ser. No. 350,049
Int. Cl.³ F02M 35/10
U.S. Cl. 123—52 M 2 Claims



1. An air and fuel induction system for an engine having an inlet manifold adapted to supply an air-fuel mixture to a plurality of engine combustion chambers, said system comprising an air gallery having a plurality of mixture nozzles, each of said nozzles opening to said inlet manifold adjacent an associated engine combustion chamber, said nozzles being effective to maintain the pressure in said air gallery greater than the pressure in said inlet manifold during engine operation, said air gallery having a primary air inlet and said manifold having a secondary air inlet, said primary air inlet having a smaller flow area than said secondary air inlet, a plurality of fuel injectors, each of said injectors being associated with one of said nozzles and being adapted to deliver fuel across said air gallery into the

associated nozzle for preliminary mixture with air flowing through the nozzle from said gallery to said manifold and for further mixture with air in said manifold, and means controlling said injectors to provide fuel delivery which varies with air flow through said air inlets, and wherein said system further comprises a primary throttle in said primary air inlet and a secondary throttle in said secondary air inlet, and staged throttle mechanism linking said throttles for moving said primary throttle between closed and partially open positions without moving said secondary throttle and for moving said primary throttle between partially open and wide open positions while concomitantly moving said secondary throttle between closed and wide open positions, said system being effective to increase air flow through said nozzles upon an increase in air flow through said air inlets whereby an increase in fuel delivery by said injectors in response to an increase in air flow through said air inlets is accompanied by an increase in air flow through said nozzles to enhance air-fuel mixing.

4,475,487

JOINT-PIPE FOR CARBURETOR

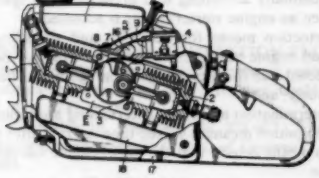
Takashi Fukuoka, Fuchu, and Yoshiaki Nagao, Tokyo, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,407

Claims priority, application Japan, Dec. 4, 1981, 56-180121[U]

Int. Cl.³ F02B *33/04*; F02M *9/10*

U.S. Cl. 123—73 V **1 Claim**



1. In a crank-case pre-compression type 2-cycle internal combustion engine E having a reed valve **6** mounted in an intake port **8** formed in the wall of a crank case **3**, a carburetor joint-pipe **5** for connecting said intake port **8** to a carburetor **4** which is offset rearwardly from said intake port **8**, said joint-pipe **5** comprising:

an air-fuel mixture passage **16** formed therein and provided with an intermediate contracted portion **12** and a partition plate **11** extending between said contracted portion **12** and an inlet opening **9** of said passage **16** along the axis of said passage **16**, the portion of said mixture passage **16** near the outlet opening **10** thereof being curved to cross said suction port **8** substantially perpendicularly to the latter.

4,475,488

LUBRICATING SYSTEM FOR AN OUTBOARD MOTOR

Rou Odashima, Hamamatsu, Japan, assignor to Yamama Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

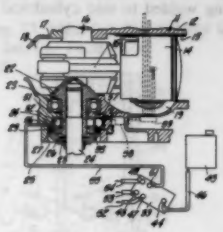
Filed Jan. 19, 1983, Ser. No. 459,227

Claims priority, application Japan, Jan. 22, 1982, 57-7636

Int. Cl.³ F02B *33/04*

U.S. Cl. 123—73 AD **5 Claims**

1. A lubricating system for a crankcase compression, two-cycle engine having a crankshaft rotatably supported in a crankcase, an oil pump drive means affixed to said crankshaft, a cavity enclosing said oil pump drive means, seal means disposed on opposite sides of said oil pump drive means and sealing said cavity, and means for delivering pressurized oil from the oil pump driven by said oil pump drive means to said



cavity for lubricating said oil pump drive means between said seal means.

4,475,489

VARIABLE VALVE TIMING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

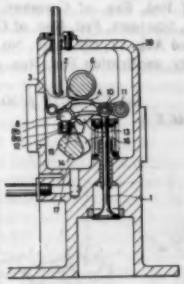
Shoichi Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1982, Ser. No. 380,373

Claims priority, application Japan, May 27, 1981, 56-79143; May 27, 1981, 56-79144; May 27, 1981, 56-79145

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **10 Claims**



1. A variable valve timing device for an engine comprising; a first rocker arm driven by a first rocker cam, a second rocker arm driven by a second rocker cam provided for a valve in at least one of an intake and an exhaust system of said engine, said first and second rocker cams driven in synchronization with the revolution of the engine, fulcrum means at the bases of said rocker arms alternately displaced to cause said rocker arms to alternately take an operative position in which the rocker arm is engaged with the respective rocker cam and an inoperative position in which the rocker arm is not engaged with the respective rocker cam, and, means for causing said two rocker arms to assume said respective operative positions simultaneously for a time period prior to either of said rocker arms being displaced to assume its operative position.

4,475,490

HYDRAULIC VALVE LIFTER

Katsuyasu Oono, Toyota, and Gozo Kaji, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 28, 1982, Ser. No. 383,300

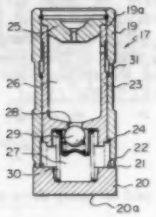
Claims priority, application Japan, Jan. 19, 1982, 57-5336

Int. Cl.³ F01L *1/14*

U.S. Cl. 123—90.52 **5 Claims**

1. A hydraulic valve lifter comprising a body including a

hollow cylindrical portion having an axially extending hole and a lower end portion having an outer surface for contacting a cam and a flat surface facing said cylindrical portion, said end portion being welded to said cylindrical portion at said flat surface; and



a plunger slidably mounted within said hole along an inner surface of said cylindrical portion; said plunger having a bottom for engaging said flat surface with a peripheral annular cut-out in said bottom facing said end portion to avoid contact with inwardly projecting flash on said cylindrical portion caused by welding of said cylindrical portion to said end portion.

4,475,491

WIDE-GAP IGNITION DISTRIBUTOR

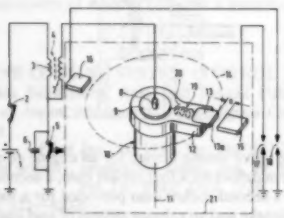
Werner Grünwald, Gerlingen, and Jurgen Schmatz, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 12, 1982, Ser. No. 407,314

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136745

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—146.5 A **21 Claims**



1. Ignition distributor for internal combustion engines having an engine driven rotary shaft, a rotor affixed thereto having a radial extremity provided for revolving in a path passing by an array of fixed ignition circuit electrodes, a distributor electrode at said extremity of said rotor, a contact plate on said rotor at the center of said pattern of revolution of said rotor extremity, means for connecting said contact plate to a source of ignition pulses, an insulating rotor body for carrying said contact plate and said distributor electrode, means including interference-suppression impedance for electrically connecting said distributor electrode to said contact plate, and the improvement, according to the invention wherein:

the spacing between said fixed ignition electrodes and said distributor contact during the closest approach of the latter to the former is between 3 and 5 millimeters, and

said fixed ignition electrodes, at least in an exposed region thereof, consist of an alloy containing silicon, aluminum and calcium having a substantially lower electron emission energy requirement and a higher secondary electron emission capability than the material of said contact plate.

4,475,492

SYSTEM FOR FORCEFULLY IGNITING SPRAYED FUEL OF A DIESEL ENGINE DURING ENGINE STARTING

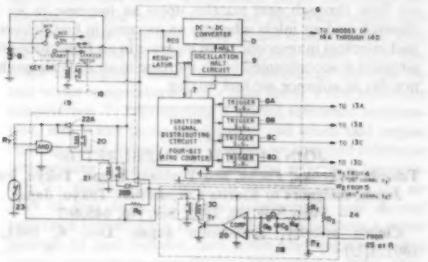
Junichi Furukawa, Yokohama; Yasuhiko Nakagawa, Kamakura; Meroji Nakai, and Kyugo Hamai, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 21, 1982, Ser. No. 420,843

Claims priority, application Japan, Sep. 30, 1981, 56-155744; Sep. 30, 1981, 56-155745

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 BG **14 Claims**



12. A system for forcefully igniting a spray of fuel injected into a diesel engine, which comprises:

(a) a plurality of spark plugs, each located within a corresponding engine cylinder;

(b) an ignition means for igniting each of said spark plugs sequentially according to a predetermined ignition order when an engine starter motor is actuated;

(c) detection means for detecting and signalling that the diesel engine has reached a state in which a spray of fuel injected into the diesel engine can ignite and burn spontaneously; and

(d) determination means for determining a stopping point of said ignition means at a fixed time interval after said detection means detects that the diesel engine has reached said state.

4,475,493

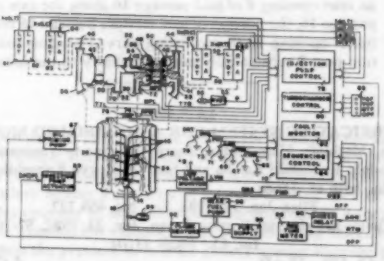
START AND SHUTDOWN SEQUENCER FOR A DIESEL ENGINE

Sara B. Masteller, and Charles S. Fujawa, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 16, 1983, Ser. No. 466,993

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 B **3 Claims**



1. A starting sequence controller for a diesel engine having a starting motor for cranking the engine, an oil priming pump for supplying pressurized oil to the engine during starting conditions, a fuel pump for pressurizing fuel to an injection

pump, a means for shutting off fuel to the engine, and means for heating the fuel prior to its delivery to said injection pump, said controller comprising:

means for turning on said oil priming pump prior to the initiation of the starting sequence;

means for sensing the initiation of the starting sequence by the operation of a starting switch and for generating a start indication therefrom;

means, responsive to said start indication, for turning said fuel pump on, for turning off said oil priming pump, and for activating a first timer which generates a first timeout indication after being activated a predetermined period of time;

means, responsive to said first timeout indication, for turning on said flame heaters, for turning on said starting motor, and for turning on said fuel shutoff means, for activating a second timer which generates a second timeout indication after being activated a second period of time, and for activating a third timer which generates a third timeout indication after being activated a third period of time;

means, responsive to said second timeout indication, for turning off said start indication, and for turning off said fuel shutoff means;

means for determining whether the engine is operating at or above an operational speed; and

means, responsive to the activity of the third timer for shutting off the heating means, and for turning off the starter motor if the engine speed is determined to be above an operational speed.

4,475,494

VALVE FOR AN INTERNAL COMBUSTION ENGINE

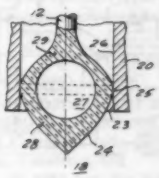
Werner Huther, Karlsfeld, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,607

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122603

Int. Cl.³ F01L *3/20, 3/22*

U.S. Cl. 123—188 A **6 Claims**



1. A valve for an internal combustion engine having a combustion chamber, comprising:

a stationary valve member having a radially inwardly facing cylindrical sealing surface, and

a valve member movable within the stationary valve member and having a radially outwardly facing annular cylindrical sealing surface, the sealing surface of the movable valve member engaging the sealing surface of the stationary valve member while the two sealing surfaces slide with respect to each other in an axial direction of the sealing surfaces,

at least the movable valve member being made of ceramic material; wherein the movable valve member has an inverted tear drop shape formed with said annular cylindrical sealing surface which tapers to a point towards the combustion chamber.

4,475,495

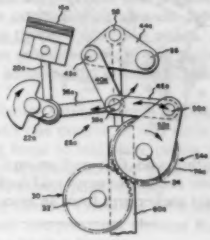
TRANSMISSION

Martin G. Lydell, R.D. #1, Wiegren Rd., Frewsburg, N.Y. 14738

Filed Sep. 27, 1982, Ser. No. 424,489

Int. Cl.³ F02B *75/32*

U.S. Cl. 123—197 AB **7 Claims**



1. In an internal combustion engine having a series of power cylinder containing pistons therewithin; a crankshaft having cranks coupled to said pistons by piston connection rods; an infinitely variable transmission for transferring rotary motion of said crankshaft to an output shaft disposed essentially parallel to said crank shaft and connected in turn to a vehicle wheel drive means, said transmission comprising in combination:

a plurality of motion transmitting units operably associated one with each of the cylinders of said engine, each of said units including a one-way clutch mounted on said output shaft and a linkage having opposite ends thereof pivotally coupled to said crank shaft and said clutch; and

a common linkage position control mechanism for simultaneously moving each said linkage between first and second limiting pivotal positions providing for maximum and minimum oscillations of each said clutch about the axis of said output shaft during rotation of said crank shaft, wherein each said linkage includes a connecting rod having a first end pivotally connected to said crank shaft and a second end, and at least one drive link having a first end pivotally connected to said second end of said connecting rod by a first pivot pin and a second end pivotally coupled to said one-way clutch by a second pivot pin; and said control mechanism includes at least one control link and control arm for each said linkage and common control means for each said control arm, said control link having a first end pivotally coupled to said connecting rod and said drive link by said first pivot pin and a second end pivotally coupled to said control arm by a third pivot pin, said control arm is pivotally supported and said common control means effects pivotal movement of each said control arm to move each said third pivot pin between a first position corresponding to said first limiting pivotal position and a second position corresponding to said second pivotal position.

4,475,496

VALVE MECHANISM

Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1982, Ser. No. 396,546

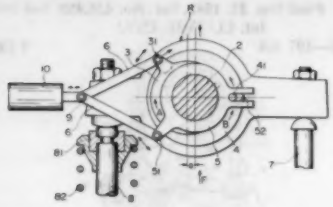
Claims priority, application Japan, Jul. 13, 1981, 56-103489[U]; Sep. 4, 1981, 56-130951[U]

Int. Cl.³ F02D *13/06*

U.S. Cl. 123—198 F **11 Claims**

1. A device for halting operation of one or more cylinders having valves during engine operation of a multi-cylinder internal combustion engine comprising: a rocker arm, a rocker shaft for supporting said rocker arm, a first bush installed on said rocker shaft to be eccentric with respect to an axis of said rocker shaft, a second bush installed on said first bush to be

eccentric with respect to an axis of said first bush, said rocker arm being positioned on said second bush, and means for simul-



taneously rotating said first and second bushes in opposite directions to one another to move said rocker arm upwardly to thus detach said rocker arm from an associated valve.

4,475,497

INTERNAL COMBUSTION ENGINE HAVING AN INTAKE/EXHAUST VALVE ASSEMBLY AND HYDRAULIC MEANS FOR RENDERING THE VALVE ASSEMBLY INOPERATIVE

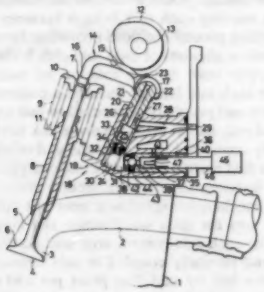
Shoichi Honda; Masaaki Matsuura, both of Tokyo, and Nobuo Anno, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,623

Claims priority, application Japan, Nov. 4, 1981, 56-176655; Nov. 4, 1981, 56-176656

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—198 F **10 Claims**



1. An intake/exhaust valve assembly of an internal combustion engine including an engine block having a combustion chamber formed therein, comprising:

(1) a reciprocating valve axially movable back and forth into and out of the combustion chamber;

(2) a cam rotatable about an axis fixed with respect to the engine block at a speed variable with the speed of rotation of the crankshaft of the engine;

(3) a cam follower engaging at one end with the reciprocating valve, said cam being held in rollable engagement with the cam follower;

(4) adjusting means comprising

a cylinder wall which is stationary with respect to said engine block and which is formed with a main axial bore open at one end thereof and closed at the other end thereof, and an auxiliary axial bore being at one end thereof open to and integral with said main axial bore adjacent the closed end of the main axial bore, said cylinder wall being further formed with a fluid drain passageway communicable with said auxiliary axial bore,

a control plunger axially slidable between predetermined first and second axial positions in said main axial bore and having an end wall defining a pressure-acting chamber in the main axial bore, the control plunger being formed with a passageway which is open at one end thereof to said pressure-acting chamber and at the other end thereof through a peripheral wall portion of the plunger, said cam follower pivotally engaging said control plunger, said control plunger being operative and inoperative to bear the force transmitted thereto from said cam through said cam follower when the control plunger is in said first and second axial positions, respectively, thereof, and

one-way check valve means providing one-way communication from said passageway to said pressure-acting chamber;

(5) pressure-release valve means positioned in said auxiliary axial bore so as to form a fluid discharge chamber open to and integral with said pressure-acting chamber and having a first condition providing communication between the fluid discharge chamber and the fluid drain passageway and a second condition blocking the communication therebetween;

(6) valve actuating means operative to actuate the pressure-release valve means under predetermined operational conditions of the engine; and

(7) fluid supply means communicable with the passageway in said control plunger.

4,475,498

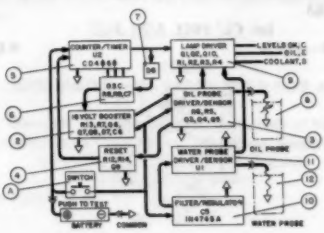
ENGINE DETECTING DEVICE

Erwin E. Hurner, 2605 S. Rivershore, Moorhead, Minn. 56560

Filed Dec. 15, 1983, Ser. No. 561,839

Int. Cl.³ F02B *77/08*

U.S. Cl. 123—198 DB **7 Claims**



1. A detection device for sensing lubricant and coolant levels in a motor driven vehicle, comprising

a lubricant level probe comprising a thermistor;

a coolant level probe;

circuitry communicating with said probes having a booster and timer to boost a normal D.C. power source of 12 volts to pulses of 18 volts across said thermistor for predetermined period of times set by said timer;

a normally off pressure switch activating said circuitry;

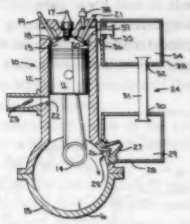
a first light emitting diode communicating with said circuitry to light at the end of said predetermined period of time if both of said probes detect the pressence of the appropriate fluid; and

a second and third light emitting diodes associated with said coolant and lubricant level probes respectively and said circuitry to light in the absence of appropriate fluid instead of said first light emitting diode.

4,475,499
INLET TUNING OF CRANKCASE SUPERCHARGED FOUR CYCLE ENGINE

Benjamin L. Sheaffer, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 22, 1982, Ser. No. 452,206
Int. Cl.³ F02B 75/02
U.S. Cl. 123—317 **4 Claims**



1. In a supercharged four cycle internal combustion engine having a crankcase, a crankshaft, a piston reciprocable in a cylinder, a device for supplying fuel to said cylinder, and valved air inlet and exhaust ports in said cylinder, a cylinder air charging device comprising:

(a) an air induction port disposed in the wall of said engine and with said air induction port providing communication between said crankcase and the atmosphere when said piston is at a position at the end of its upward stroke,

(b) and a tuned closed loop connecting said crankcase with said engine cylinder and providing an air passage therebetween, said closed loop including:

(1) an air outlet port disposed in said crankcase for receiving a discrete charge of compressed air therethrough in response to each downward stroke of said piston,

(2) means forming a pair of enlarged chambers with a first chamber communicating with said crankcase air outlet port and a second chamber independent of said fuel supply device and communicating with said cylinder inlet,

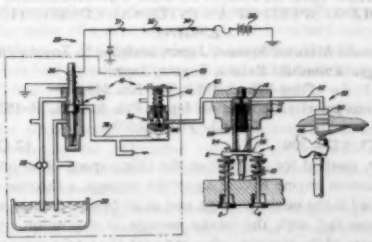
(3) and an unrestricted tuning pipe disposed between and joining said chambers,

(c) said loop forming tuned means receiving successive pressure pulses of compressed air from said crankcase in response to piston reciprocation for subsequent transfer to said cylinder.

4,475,500
AUTOMATIC LASH ADJUSTMENT FOR ENGINE COMPRESSION BRAKE

Michael A. Bostelman, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 28, 1983, Ser. No. 566,145
Int. Cl.³ F02D 13/04
U.S. Cl. 123—321 **5 Claims**



1. In a braking system for an internal combustion engine having a gas compressing combustion engine piston reciprocally mounted within an engine cylinder from which gas may be exhausted by opening an exhaust valve by means of a slave hydraulic piston, the improvement which consists in associating with said slave piston biasing means which includes:

(1) a base support attached to housing for said biasing means,

(2) a lash compensating element in said housing positioned between said base support and one portion of said slave piston, said lash compensating element having a portion thereof extending through said slave piston,

(3) adjusting means protruding from and extending through said housing for adjusting the position of said lash compensating element,

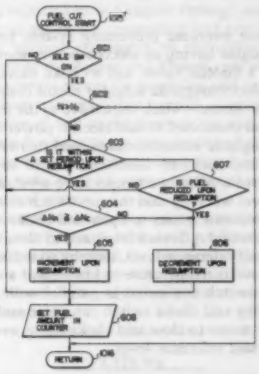
(4) a first biasing element extending between said lash compensating element and one portion of said slave piston for imparting a biasing force to said slave piston which tends to move said force applying surface from said brake ready position to said retracted position, and

(5) a second biasing element extending between said base support and said lash compensating element for imparting to said slave piston a biasing force.

4,475,501
ELECTRONIC CONTROL TYPE FUEL INJECTION SYSTEM

Katsushi Kato; Shigenori Isomura; Akio Kobayashi, and Toshio Kondo, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 12, 1982, Ser. No. 348,178
Claims priority, application Japan, Feb. 16, 1981, 56-21264
Int. Cl.³ F02D 5/02
U.S. Cl. 123—325 **4 Claims**



1. An electronic control type fuel injection system comprising:

sensor means, including an engine speed sensor, for detecting states of an engine;

computer means for reading the detected output signals from said sensor means and computing the amount of fuel to be injected;

converter means for converting a signal indicative of the amount of fuel to be injected from the computer means to a pulse signal having a pulse width corresponding to the time during which fuel is to be injected; and

injection valve means which open in accordance with said pulse signal to inject fuel to engine;

said computer means stopping fuel injection when the engine speed is reduced and is higher than a predetermined cut speed, and then: (1) when the change in speed of the engine is smaller than a predetermined value, at the time of fuel supply resumption, a pulse signal of a narrower width than a normal pulse width occurring in fuel injec-

tion had not been stopped is first applied to the injection valve means, and thereafter the widths of the pulses subsequently applied are gradually increased back to the normal pulse width, and (2) when the change in speed of the engine is larger than said predetermined value, a pulse signal of a wider width than said narrower width is applied to said injection valve means at the time of fuel supply resumption.

4,475,502

OVERHEAT PREVENTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kuniyoshi Matsumoto, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata and Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, both of, Japan

Filed Mar. 30, 1982, Ser. No. 363,464
Claims priority, application Japan, Apr. 30, 1981, 56-65630
Int. Cl.³ F02M *7/04*
U.S. Cl. 123—331 **2 Claims**

1. An engine overheat preventing system for an internal combustion engine having an electric power source, an intake passage with a throttle valve, and a choke valve, said system comprising: electromagnetic actuator means connected to said choke valve; a thermo-switch responsive to the temperature of said engine and connected to said electric power source and to said electromagnetic actuator means, said thermo-switch having an open and a closed condition, one of said conditions occurring above a reference temperature level, and the other below said level whereby said thermo-switch causes said electromagnetic actuator means to open said choke valve at temperatures below said reference level, and to close it at temperatures above said reference level, thereby to reduce the engine speed and allow its temperature to lower; and a manual open-closed choke switch connected in parallel with said thermo-switch, whereby said choke switch can cause said electromagnetic actuator means to close said choke valve, even at temperatures below said reference level.

4,475,503

ENGINE SPEED CONTROL SYSTEM

Hiroyuki Nakamura, Higashiyamato; Yoshiaki Kasai, Kiyose, and Masaaki Ohgami, Musashino, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,769
Claims priority, application Japan, Dec. 25, 1980, 55-184785
Int. Cl.³ F02M *3/00*
U.S. Cl. 123—339 **3 Claims**

1. An engine speed control system for an internal combustion engine having a throttle valve operatively connected with an actuator for actuating said throttle valve which comprises:

(a) a vehicle speed signal generating circuit for generating a signal only when the vehicle speed is lower than a predetermined low value;

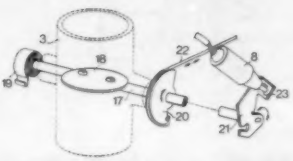
(b) an idling signal generating circuit for generating an idling signal in the idling operation of said engine;

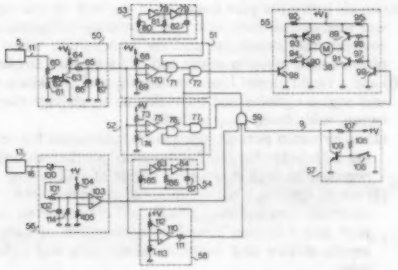
(c) an engine speed signal generating circuit for producing an engine speed signal dependent on the engine speed;

(d) an engine speed detecting circuit responsive to said engine speed signal and for producing a signal when said engine speed signal exceeds a predetermined value above zero;

(e) a logic gate, said signal from said vehicle speed generating circuit applied to said logic gate, said signal from said idle signal generating circuit applied in parallel with said prior signal to said logic gate, and said signal from said engine speed detecting circuit applied in parallel with said prior two signals to said logic gate;

(f) a first comparing circuit for comparing said engine speed signal with a predetermined reference value representing when said engine speed is below a first certain level and





generating an engine speed increasing signal when applied with a signal from said logic gate means;

(g) a second comparing circuit for comparing said engine speed signal with a predetermined reference value representing when said engine speed is above a second certain level and generating an engine speed decreasing signal when applied with a signal from said logic gate means;

(h) an actuator control circuit for operating said actuator in opposite directions in accordance with said engine speed control signals; whereby said throttle value is opened, closed or unmoved to perform an automatic idling speed control.

4,475,504

METHOD AND APPARATUS FOR CONTROLLING THE IDLING SPEED OF AN INTERNAL COMBUSTION ENGINE

Kazuyoshi Mizuno, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 3, 1982, Ser. No. 345,360
Claims priority, application Japan, Feb. 6, 1981, 56-15788
Int. Cl.³ F02M *3/00*
U.S. Cl. 123—339 **12 Claims**

1. A method for controlling the idling speed of an internal combustion engine having an intake passage, a throttle valve disposed in the intake passage, and an air bypass passage which is connected with the intake passage at a position located upstream of the throttle valve and with the intake passage at a position located downstream of the throttle valve, said method comprising the steps of:

detecting the actual idling speed of the engine to produce a first electrical signal corresponding to said speed;

detecting the atmospheric pressure surrounding the engine to produce a second electrical signal which indicates said pressure;

calculating, based on the first electrical signal, the difference between the actual idling speed of the engine and the desired idling speed;

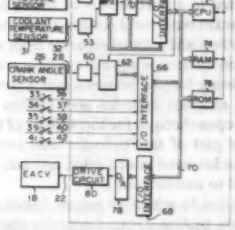
calculating the value of a control output signal from said calculated difference;

determining, in response to said second electrical signal, an atmospheric pressure correction coefficient by using one of continuous functions which indicate relationships between the atmospheric pressure and the atmospheric pressure correction coefficient;

correcting the calculated value of the control output signal in accordance with said determined atmospheric pressure correction coefficient; and

adjusting, based on the control output signal, the flow rate of air passing through the air bypass passage to control the actual idling speed of the engine to bring it close to the desired idling speed.

7. An apparatus for controlling the idling speed of an internal combustion engine having an intake passage, a throttle valve disposed in the intake passage, and an air bypass passage



which is connected with the intake passage at a position located upstream of the throttle valve and with the intake passage at a position located downstream of the throttle valve, said apparatus comprising:

means for detecting the actual idling speed of the engine to produce a first electrical signal corresponding to said speed;

means for detecting the atmospheric pressure surrounding the engine to produce a second electrical signal which indicates said pressure;

processing means for (1) calculating, based on the first electrical signal, the difference between the actual idling speed of the engine and the desired idling speed, (2) calculating the value of a control output signal from said calculated difference, (3) determining, in response to said second electrical signal, an atmospheric pressure correction coefficient by using one of continuous functions which indicate relationships between the atmospheric pressure and the atmospheric pressure correction coefficient, and (4) correcting the calculated value of the control output signal in accordance with said determined atmospheric pressure correction coefficient; and

means for adjusting, based on the control output signal, the flow rate of air passing through the air bypass to control the actual idling speed of the engine to bring it close to the desired idling speed.

4,475,505

SYSTEM FOR CONTROLLING IDLING RPM BY SYNCHRONOUS CONTROL OF SUPPLEMENTARY AIR

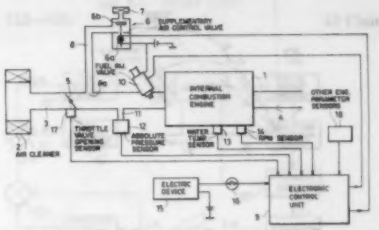
Shumpei Hasegawa, Niiza; Takashi Koumura, Iruma; Toshiyuki Mieno, Wako, and Kiyoshi Oikawa, Niiza, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1983, Ser. No. 456,112

Claims priority, application Japan, Jan. 13, 1982, 57-3779

Int. Cl.³ F02M *3/00*

U.S. Cl. 123—339 **6 Claims**



1. An idling rpm feedback control system for an internal combustion engine having an intake passage, and a throttle valve arranged in said intake passage, comprising:

an air passage having one end communicating with said intake passage at a location downstream of said throttle valve and another end communicating with the atmosphere, respectively;

an on-off type electromagnetic control valve arranged across said air passage to regulate the quantity of suction air being supplied to said engine through said air passage;

valve control means for controlling said control valve in a feedback manner responsive to the difference between actual rpm of the engine and desired rpm of the engine;

fuel supply control means for supplying said engine with fuel in quantities corresponding to total quantities of suction air inclusive of said supplementary air; and

sensor means for detecting a predetermined rotational position of said engine and supplying a signal indicative of the detected predetermined engine rotational position to said valve control means;

said valve control means being operable to open said control valve in synchronism with said predetermined engine rotational position signal, in a manner such that said control valve is opened one time each time a pulse of said predetermined engine rotational position signal is supplied thereto.

4,475,506

PROGRAMMABLE FUEL ECONOMY OPTIMIZER FOR AN INTERNAL COMBUSTION ENGINE

Hugh E. Riordan, West Bend, Wis., assignor to Brunswick Corporation, Skokie, Ill.

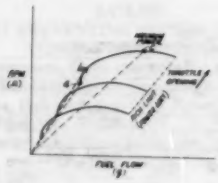
Continuation of Ser. No. 305,900, Sep. 25, 1981, abandoned. This application Jan. 25, 1984, Ser. No. 573,579

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—352 **6 Claims**

1. A fuel control system for an internal combustion engine, comprising: means for incrementally varying the fuel flow rate to the internal combustion engine by a predetermined amount, means for establishing a first sampling interval and for sampling and storing a first reference value of said internal combustion engine r.p.m. at the commencement of said sampling interval, means for detecting a change in said internal combustion engine r.p.m. resulting from the varying fuel flow rate, said r.p.m. change being in the range of between 10 and 20 r.p.m., means responsive to said detecting means for generating an error signal indicative of the difference in said internal combustion engine r.p.m. between internal combustion engine

r.p.m. at the termination of said first sampling interval and said first reference value, and means responsive to said generating means for controlling said varying means and for changing said fuel flow rate in a second sampling interval, subsequent to said first sampling interval, in a manner which operates said internal combustion engine at a predetermined point on the engine's



r.p.m. vs. fuel flow curve, said predetermined point being at the borderline of engine lean misfire, but at a predetermined displacement from misfire sufficient to provide smooth running of the engine, said first and second sampling intervals being equal and being in the range from one-fifth second to one-half second.

4,475,507

FUEL INJECTION AMOUNT CONTROL

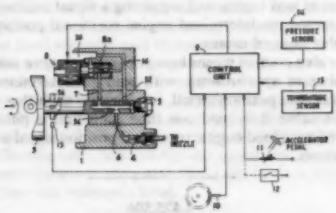
Masahiko Miyaki, Oobu; Akira Masuda, and Toshimi Matsumura, both of Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 18, 1983, Ser. No. 514,608

Claims priority, application Japan, Jul. 21, 1982, 57-127365; Jul. 23, 1982, 57-129224

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—357 **18 Claims**



1. Apparatus for controlling the amount of fuel supplied to an internal combustion engine, comprising:

a fuel injection pump for injecting fuel under pressure;

an electromagnetic valve operatively connected to said fuel injection pump for opening and closing a fuel passage through which pressurized fuel escapes so as to determine the amount of fuel injected from said pump;

first means for detecting an operating condition of said engine;

second means for detecting a reference position of a movable member of said fuel injection pump; and

third means for controlling said electromagnetic valve in accordance with information from said first and second means, said third means including memory means for storing prestroke time data and actual injection time data respectively, said third means continuously detecting a successively increasing variable from the instant that said electromagnetic valve is closed, comparing said successively increasing variable with a value corresponding to the sum of said prestroke time and said actual injection time, which is determined on the basis of the engine operating condition, and opening said electromagnetic valve to terminate fuel injection when the former equals or exceeds the latter.

4,475,508

AUTOMOTIVE ENGINE CYLINDER BLOCK

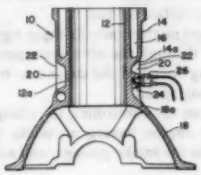
Makoto Okada, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 3, 1982, Ser. No. 446,675

Claims priority, application Japan, Dec. 10, 1981, 56-199044

Int. Cl.³ F02B *5/04, 33/00*

U.S. Cl. 123—425 **6 Claims**



1. A cylinder block of an automotive internal combustion engine,

said cylinder block being formed of aluminum alloy and comprising:

a cylinder wall section defining an engine cylinder and connected to a skirt section of the cylinder block;

a water jacket outer wall section connected to said cylinder wall section and located separate from said skirt section at a portion integral with said cylinder wall section, a water jacket being formed between said water jacket outer wall section and said cylinder wall section so as to be completely open through the top surface of the cylinder block, a lower part of said cylinder wall section between said water jacket outer wall section and said skirt section being exposed to ambient air; and

a boss section to which an engine knock sensor is secured, said boss section being integrally formed at the outer surface of said cylinder wall section at said exposed lower part.

4,475,509

INDUCTION SYSTEM OF FOUR STROKE INTERNAL COMBUSTION ENGINE

Takanori Hayashida, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Continuation of Ser. No. 964,156, Nov. 28, 1978, abandoned. This application Dec. 10, 1981, Ser. No. 329,521

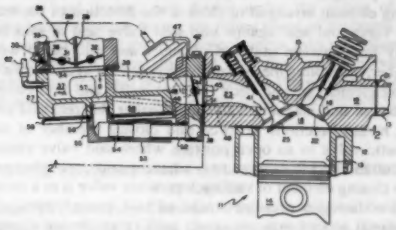
Claims priority, application Japan, Nov. 30, 1977, 52-142671

Int. Cl.³ F02M *13/07*; F02B *17/00*

U.S. Cl. 123—432 **17 Claims**

1. An induction system for an internal combustion engine having a variable volume chamber in which combustion occurs, a charge forming device having a fuel discharge system including discharge port, and a main induction passage having a plenum for delivering charge therefrom to said variable volume chamber, the improvement comprising an auxiliary induction passage communicating at its downstream end with said variable volume chamber, said auxiliary induction passage having its inlet disposed in the lower wall of said plenum and in the path of fuel discharge from said charge forming device discharge port for delivering such fuel to said variable volume chamber through said auxiliary induction passage, and valve means for controlling the ratio of communication of the induction passages with the chamber so that a substantial portion of

certain load requirements of the engine are served primarily through the auxiliary induction passage and a substantial portion of other load requirements are served primarily through the main induction passage.

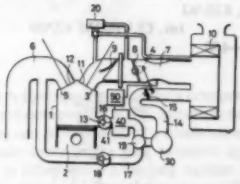


4,475,510

SECONDARY AIR INTRODUCING DEVICE IN ENGINE

Urataro Asaka, Saitama; Shinkichi Miyazawa; Teruyuki Nakano, both of Tokyo, and Shoji Masuda, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,356
Claims priority, application Japan, May 15, 1981, 56-72157
Int. Cl.³ F02B *29/00, 33/00;* F02M *69/00*
U.S. Cl. 123—432 **3 Claims**



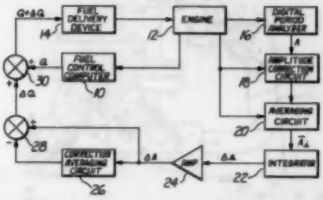
1. A secondary air introducing system for an internal combustion engine including a cylinder an associated piston; a main suction passage for introducing a mixture into a combustion chamber defined by said piston and said cylinder; an exhaust passage for discharging an exhaust gas from the combustion chamber; and a throttle valve in said main suction passage for controlling an amount of the mixture, comprising air cleaner means, sub-intake passage means separate and independent of said main suction passage for introducing a secondary air from said air cleaner means into said combustion chamber, a secondary air introducing hole formed in a side wall of said cylinder in such a manner that said hole is located near the bottom dead center of said piston and is opened and closed by said piston, said secondary air introducing hole communicating through said sub-intake passage means to said air cleaner means whereby the secondary air is introduced into said combustion chamber through said secondary air introducing hole by a negative pressure produced in said combustion chamber at the end of a suction stroke of said piston, bypass passage means connected between said exhaust passage and said sub-intake passage means for introducing said secondary air to said exhaust passage, directional switching valve means disposed in said sub-intake passage means adjacent said bypass passage means for selectively directing said secondary air to said combustion chamber or said exhaust passage, air pump means disposed in said sub-intake passage means upstream of said directional switching valve means and control valve means interposed in said sub-intake passage means between said air pump means and said air cleaner means, said control valve means being mechanically coupled to said throttle valve for being opened and closed in accordance with variation in load imposed on said engine, thereby controlling the flow rate of said secondary air.

4,475,511

FUEL DISTRIBUTION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Edwin A. Johnson, Clarkston, and Chun K. Leung, Bloomfield Hills, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 1, 1982, Ser. No. 413,919
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—436 **22 Claims**



1. In combination with an internal combustion engine fuel control system including a fuel control computer for generating fuel delivery signals in response to the operational parameters of the engine, means for delivering fuel to the engine in response to the fuel delivery signals, and means for generating amplitude signals indicative of the magnitude of the torque impulses imparted to the engine's crankshaft by the burning of the fuel in the engine's individual cylinders, a fuel distribution control for equalizing the magnitudes of the torque impulse produced by all of the cylinders characterized by:

means for correcting the value of said amplitude signals in response to the rotational velocity and the rotational position of the engine's crankshaft to generate corrected amplitude signals;

first means for averaging said corrected amplitude signals to generate an individual average amplitude signal for each engine cylinder;

means for integrating all of said individual average amplitude signals to generate individual difference signals indicative of the difference between said individual average amplitude signals and the average amplitude for all the cylinders

second means for averaging all of said individual difference signals to generate an average difference signal;

first means for subtracting said average difference signal from each of said individual difference signals to generate a fuel correction signal for each cylinder; and

means for summing said fuel correction signals to said fuel delivery signals to generate a corrected fuel delivery signal tending to equalize the contribution of each cylinder to the total torque output of the engine.

4,475,512

AIR-FUEL RATIO CONTROL SYSTEM

Hitoshi Suzuki, Niiza, and Kazuo Hara, Musashino, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

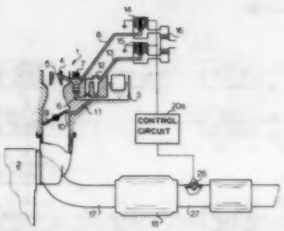
Filed Feb. 17, 1982, Ser. No. 349,548
Claims priority, application Japan, Feb. 17, 1981, 56-22076
Int. Cl.³ F02M *7/20*
U.S. Cl. 123—440 **4 Claims**

1. In an air-fuel ratio control system for an internal combustion engine having an exhaust passage, a carburetor for the engine, an electromagnetic valve for correcting the air-fuel ratio of air-fuel mixture supplied to said engine, an O_2-sensor for detecting oxygen concentration of exhaust gases, a cata-

lytic converter in said exhaust passage, and a feedback control circuit responsive to the output of said O_2-sensor for producing signals for driving said electromagnetic valve for correcting the air-fuel ratio, the improvement wherein

said O_2-sensor is provided in said exhaust passage at a position downstream of said catalytic converter, and wherein

said position is such that the volume of said exhaust passage from an inlet of the exhaust passage to said position is substantially twice as much as the volume from said inlet to an inlet of said catalytic converter, and



said feedback control circuit comprises a differentiating circuit means for differentiating the output of said O_2-sensor, a multivibrator means responsive to the output of said differentiating circuit means for generating output pulses, and a microcomputer means operating in dependency on the output pulses of said multivibrator means for producing outputs for operatively actuating said electromagnetic valve.

4,475,513

FUEL METERING DEVICE FOR FUEL INJECTION PUMPS

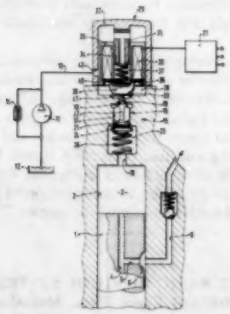
Ulrich Flaig, Markgröningen, and Johannes Locher, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,737

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1981, 3140933

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—446 **4 Claims**



1. A fuel metering device for fuel injection pumps including a housing comprising a pump piston bore, a pump piston in said bore, a pump work chamber in said pump piston bore confined by said pump piston, said housing including a fuel supply passage extending from said pump work chamber to a fuel chamber, said fuel supply passage including oppositely disposed first and second valve seats, a magnetic valve secured to said housing in axial alignment with said fuel supply passage, said magnetic valve including a coil, a core and a valve closing member that is connected to a flat armature and which extends into said fuel chamber and seats on said second valve seat, said valve closing member being stressed by a closing spring in the direction of closing, a back pressure valve disposed in said fuel supply passage, said back pressure valve including a valve closing element arranged to close in the direction of the magnetic valve and seat against said first valve seat in said fuel supply line between said fuel chamber and said pump work chamber, a coupling means axially disposed between said valve closing element of said back pressure valve and said closing member of said magnetic valve and further wherein said coupling means functions to force said closing member of said magnetic valve to an open position where said valve closing element and said flat armature is adjacent said core when said valve closing element of said back pressure valve is in a closed position during a pressure stroke of said pump piston, and subsequent to said pressure stroke said valve closing element opens due to fuel pressure in said fuel chamber supplied by a fuel supply means, during a suction stroke of said pump piston, said magnetic valve is activated to hold said closing member of said magnetic valve open to permit fuel flow from said fuel chamber to said pump work chamber, and upon deactivation of said magnetic valve said valve closing member of said magnetic valve closes to prevent fuel flow to said pump work chamber.

4,475,514

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

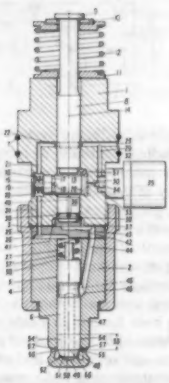
Hans List, Heinrichstrasse 126, 8010 Graz, Austria

Filed Dec. 22, 1982, Ser. No. 452,316

Claims priority, application Austria, Dec. 23, 1981, 5550/81; Mar. 3, 1982, 828/82

Int. Cl.³ F02M *47/00*

U.S. Cl. 123—458 **8 Claims**



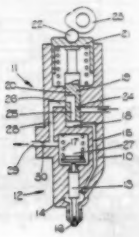
1. A fuel injection pump for internal combustion engines, including a pump body having a pump cylinder and a guide bore transversely disposed thereto, an externally actuated pump plunger reciprocable in said cylinder and defining therewith a pump pressure chamber, a slide-type shutoff device disposed for sliding movement within said bore, said pump body having a fuel feed duct and fuel channel means connecting said duct with opposite ends of said device, a return spring within said body at one end of said device, one of said pump body and said device having a connecting channel extending between said chamber and an opposite end of said device, said device having an annular peripheral groove and bore means extending from said groove into said one end, said pump body further having an annular groove connected with said duct, opening toward said chamber and being disposed directly beneath said pump plunger when in its upper end position,

solenoid actuated valve means controlled by at least one of the state variables essential for operation of the engine, such as load, engine speed, pressure and temperature of combustion air, etc., is provided for controlling the injection process by means of said device, said device under the action of said spring being disposed during the filling phase of the pump such that said peripheral groove thereof opens into said chamber, and said device being disposed in a fuel injection position thereof such that said peripheral groove thereof is covered by said pump body at the wall of said guide bore thereof.

4,475,515
FUEL SYSTEMS FOR COMPRESSION IGNITION ENGINES

Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Aug. 17, 1982, Ser. No. 408,886
Claims priority, application United Kingdom, Sep. 5, 1981, 8126927
Int. Cl.³ F02M *57/02*
U.S. Cl. 123—467 **1 Claim**



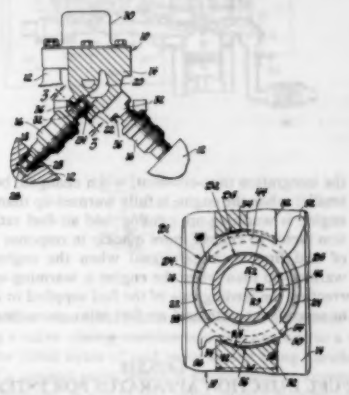
1. A fuel system for supplying fuel to a compression ignition engine, the system comprising a fuel injection nozzle through which liquid fuel can be supplied to a combustion space of the engine, the nozzle including a fuel pressure operated valve member which is lifted from a seating against the action of resilient means to allow fuel flow through an outlet, the system including a reciprocable plunger slidable within a bore and defining with the bore a pumping chamber, said chamber communicating with an inlet of the nozzle, a passage extending from said chamber to a drain, an electro-magnetically operable valve means in said passage operable to reduce the pressure of fuel in said chamber, a restriction in said passage downstream of said valve means, and passage means connected at one end to said passage intermediate the valve means and said restriction, the other end of the passage means being connected to a chamber into which extends the end of the valve member of the nozzle remote from the seating, whereby the pressure wave generated in said passage downstream of the valve means when said valve means is opened, is applied to the valve member of the nozzle to assist the movement of the valve member into contact with the seating.

4,475,516
FUEL RAIL ASSEMBLY AND CLIP

Terrance J. Atkins, Rochester; Martin J. Field, Churchville, and Andrew J. Makusij, Fairport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 2, 1983, Ser. No. 490,483
Int. Cl.³ F02M *55/00*
U.S. Cl. 123—470 **4 Claims**

1. A fuel rail assembly comprising a fuel rail body having a transversely projecting rib and an injector socket opening transversely through said rib, the diameter of said socket exceeding the width of said rib, said rib having arcuate grooves concentric with and opening into opposite sides of said socket, an injector inserted in said socket, said injector having a peripheral groove, and a clip engaged in said grooves, said clip having an arcuate configuration with an inside diameter exceeding the diameter of said peripherl groove and less than the diameter of said injector adjacent said peripheral groove, said arcuate configuration defining a pair of leg sections with an external diameter exceeding the diameter of said socket, said arcuate configuration further defining an intermediate section connecting said leg sections and having an external radius less than the radius of said socket, said clip further including a locking tab at the intersection of one of said leg sections and said intermediate section and an operating tab at the intersection of the other of said leg sections and said intermediate section, said tabs projecting to a radius exceeding the radius of said arcuate grooves, whereby said clip may be engaged in said



peripheral groove of said injector and said intermediate section of said clip aligned with said rib prior to insertion of said injector into said socket, and whereby said operating tab may be employed to rotate said clip in said grooves after insertion of said injector into said socket, said clip compressing during such rotation to permit said locking tab to pass through one of said arcuate grooves and expanding to engage said leg sections in said arcuate grooves when said locking tab has passed entirely through said one groove, said operating tab thereafter engaging said rib to exhibit further rotation of said clip and said locking tab thereafter engaging said rib to inhibit counter rotation of said clip, whereby said clip is retained in said grooves to retain said injector in said socket.

4,475,517
AIR-FUEL RATIO CONTROL METHOD AND APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Nobuyuki Kobayashi, Toyota; Hiroshi Itoh, Nagoya, and Yoichi Sugiura, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 12, 1982, Ser. No. 407,559
Claims priority, application Japan, Aug. 13, 1981, 56-125988
Int. Cl.³ F02M *7/00*
U.S. Cl. 123—489 **8 Claims**

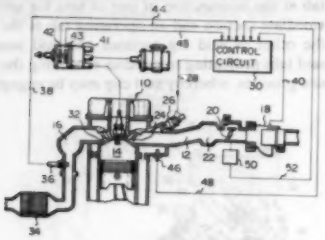
1. An air-fuel ratio control method of an internal combustion engine, comprising the steps of:

detecting the concentration of a predetermined component in the exhaust gas to generate a first electrical signal which indicates whether the air-fuel ratio in the engine is on the rich side or on the lean side with respect to the stoichiometric condition;

detecting the warm-up condition of the engine to generate a second electrical signal which indicates the detected warm-up condition;

calculating a proportional plus integral value of said first

electrical signal to produce an air-fuel ratio correction factor which corresponds to said proportional plus integral value, at least one of the proportion constant of proportional calculation and the integration time-constant of integral calculation being changed in accordance with said second electrical signal, so that the proportion constant, when changed, being made greater when the engine is fully warmed-up than when the engine is warming-up,



the integration time-constant, when changed, being made smaller when the engine is fully warmed-up than when the engine is warming-up, causing said air-fuel ratio correction factor to change more quickly in response to change of said first electrical signal when the engine is fully warmed-up than when the engine is warming-up; and

correcting the feeding rate of the fuel supplied to the engine in accordance with said air-fuel ratio correction factor.

4,475,518

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

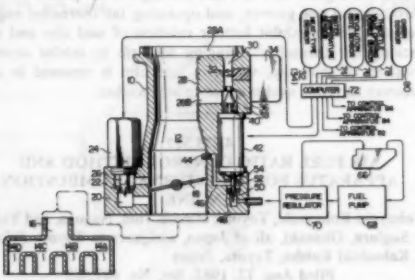
Mineo Kashiwaya; Yoshiyuki Tanabe; Kinsaku Yamada, all of Katsuta, and Hisato Tsuruta, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 1, 1982, Ser. No. 445,940

Claims priority, application Japan, Dec. 2, 1981, 56-192861

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—494 **5 Claims**



1. A fuel injection apparatus for internal combustion engine comprising:

an air bypass for communicating the upstream side of a Venturi portion formed in an air-intake path with the Venturi portion;

an air flow sensor provided in the middle of said air bypass;

an air-scaling valve provided in said air bypass so as to control the amount of air flow in said air bypass;

a level setting means for producing a set level value which is smaller than a maximum output value of said air flow sensor occuring when said air-scaling valve is fully opened during idling operation of the engine;

a discriminating means for comparing and discriminating the set level produced from said level setting means and an output of said air flow sensor;

a control signal generating means responsive to a discrimination signal from said discriminating means, for generating a control signal which controls said air-scaling valve so that the output of said air flow sensor converges to said set level; and

a fuel control means responsive to the control signal, for controlling fuel fed from a fuel supply means.

4,475,519

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

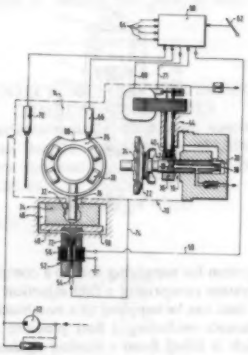
Franz Eheim, and Wolfgang Fehlmann, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 18, 1981, Ser. No. 303,333

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037730

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—502 **11 Claims**



1. A fuel injection system for internal combustion engines having at least one inlet line and one outlet line for fuel flow, at least one pump piston to supply said fuel to an injection valve of said engine, said system further including a control apparatus, said control apparatus including at least one work chamber, a movable element in said work chamber, means for coupling said movable element with an adjusting device of the fuel pump piston, at least one pressure line connected to said work chamber, a pressure fluid quantity control device for controlling fluid under pressure in said at least one pressure fluid line of the work chamber, an electrical control device electrically connected to said pressure fluid quantity control device for controlling a fluid flow path through said pressure fluid quantity control device to said at least one work chamber, characterized in that said pressure fluid quantity control device is an electro-fluidic converter which comprises a fluid stream tube that is elastically deflectable out of an outset position by means of at least one electromagnet, said fluid stream tube communicates with a fluid input source at one end and includes a nozzle outlet and said electro-fluidic converter has first and second interceptor nozzles and the fluid stream tube can be controlled by the electrical control apparatus to overlap one of said interceptor nozzles by deflection of the fluid stream tube out of an outset position or brought into an intermediate position thereof, in which the nozzle outlet of said fluid stream tube is located between said first and second interceptor nozzles and wherein said first interceptor nozzle communicates via a first pressure fluid line with the work chamber on one end of said movable element and the second interceptor nozzle communicates via a second pressure line with said work chamber on an

opposite end of said movable element from that of said first pressure line.

4,475,520

CONTACTLESS ERRONEOUS IGNITION PREVENTION TYPE IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

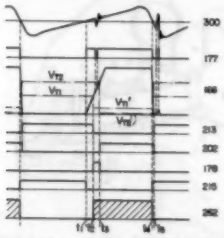
Koichi Toyama, Kariya, and Tomoatsu Makino, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 27, 1982, Ser. No. 402,799

Claims priority, application Japan, Jul. 29, 1981, 56-119002

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—618 **3 Claims**



1. A contactless erroneous ignition prevention type ignition system for an internal combustion engine comprising:

a signal generator for generating a signal in synchronism with the engine speed;

a waveform shaping circuit for shaping the waveform of said signal;

a time function generator circuit for generating a time indication output signal in response to an output of said waveform shaping circuit;

a first comparing circuit for comparing the output signal of said time function generator circuit with a first reference level and generating a first control signal when said indication output signal reaches said first reference level;

a second comparing circuit for comparing the output signal of said time function generator circuit with a second reference level and generating a second control signal substantially at a predetermined period after the generation of said control signal;

an ignition coil signal;

an output circuit for interrupting energization of said ignition coil; and

an ignition hold circuit for preventing energization of said ignition coil until said first control signal is generated, starting the energization of said ignition coil regardless of the output signal of said signal generator until said second control signal is generated.

4,475,521

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Max Greiner, Gerlingen, and Karl Konrath, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

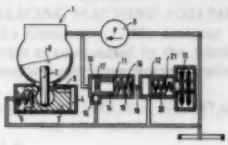
Filed Aug. 23, 1982, Ser. No. 410,668

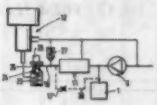
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138606

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—502 **2 Claims**

1. A fuel injection pump for internal combustion engines comprising a fuel supply pump driven in synchronism with the fuel injection pump, a pressure side of said fuel supply pump arranged to communicate with a work chamber ahead of an adjusting piston, said adjusting piston serves to adjust the injection onset and is exposed to a restoring force in a chamber connected via a discharge line to a discharge opening, said discharge opening being controlled by a control piston of a pressure control valve including a relief chamber in order to generate an rpm-dependent control pressure at the pressure side of said pressure control valve, said control piston being exposed to a restoring force and further arranged to enclose on one side a control pressure chamber, said control pressure chamber being in communication with said pressure side of said fuel supply pump via a throttle connection and with said





relief chamber via a relief line connected with a pressure valve including a valve closing member which is exposed to a valve spring, the initial stress of said valve spring being variable by means of a support point which is displaceable in accordance with air pressure, in which said valve closing member of said pressure valve comprises a slide means, and

said relief line further includes a pressure limitation valve which is disposed between a pressure maintenance valve and said pressure control valve.

4,475,522

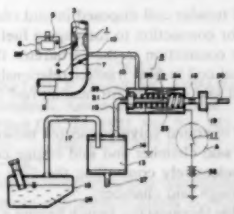
FUEL EVAPORATION GAS TREATING DEVICE

Hidemi Oonaka, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 20, 1982, Ser. No. 451,426

Int. Cl.³ F02M *33/02*

U.S. Cl. 123—520 **3 Claims**



1. A device for treating evaporated fuel for a combustion engine, comprising:

a first passageway through which evaporated fuel flows from a fuel tank into a carburetor;

a second passageway through which atmospheric air flows into the carburetor;

a canister fluidly connected with said first passageway comprising material for adsorbing evaporated fuel from the fuel tank; and

a change-over valve fluidly connected with said first and second passageways, said valve being closed to block the

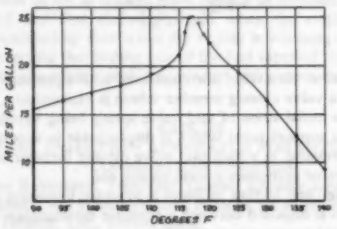
flow of evaporated fuel through said first passageway when the temperature of the engine is above and below predetermined high and low temperatures, respectively, and being open to permit the flow of evaporated fuel and air through said first and second passageways when the engine temperature is between said predetermined high and low temperatures.

4,475,523

METHOD AND SYSTEM FOR PREHEATING FUEL

Richard J. Goranflo, 109 Long Leaf La., Altamonte Springs, Fla. 32701

Filed Sep. 20, 1982, Ser. No. 420,232
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **4 Claims**



1. A fuel preheat system for an internal combustion engine having a liquid coolant, coolant pump, coolant system return, fuel pump, and a carburetor with float chamber, comprising:

(a) a heat exchanger having

i. a chamber for holding engine coolant,

ii. an inlet for connection to the engine coolant pump for introducing hot coolant into said chamber,

ii. an outlet for connection to the engine coolant system return,

iv. a helical tubular coil disposed in said chamber having an inlet for connection to the engine fuel pump and an outlet for connection to the carburetor float chamber, said helical coil in heat transfer relationship to said hot coolant in said chamber for heating fuel flowing therethrough;

(b) a solenoid operated valve connected between said coolant inlet of said chamber and said engine coolant system return for selectively controlling the flow of hot engine coolant through said chamber;

(c) an adjustable thermostatic switch having a heat sensitive bulb disposed in said chamber, said thermostatic switch connected to said solenoid operated valve for closing said valve when the temperature of the hot coolant in said chamber is greater than a selected adjustment thereof and opening said valve when the temperature of the hot coolant in said chamber is less than the selected adjustment thereof;

(d) a J-tube disposed within said chamber and connected to said coolant inlet with an open end adjacent said bulb; and

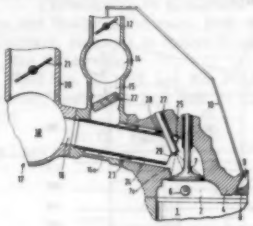
(e) thermal insulation surrounding the engine fuel pump, said line to said fuel pump, said line to said float chamber and said heat exchanger chamber.

4,475,524

DEVICE FOR ADMITTING EXHAUST GASES AND FUEL-AIR MIXTURES INTO THE CYLINDERS OF AN INTERNAL COMBUSTION ENGINE

Konrad Eckert, Stuttgart; Klaus Müller, Tamm; Ernst Linder, Mühlacker; Wilhelm Polach, Möglingen, and Heinz Britsch, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 246,965
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011580
Int. Cl.³ F02B *47/08*
U.S. Cl. 123—568 **7 Claims**



1. A device for admitting exhaust gases and fuel-air mixtures into each cylinder of an internal combustion engine comprising a combustion chamber, an inlet port connecting with said combustion chamber, an inlet valve in said inlet port, an intake channel communicating with said inlet port, an exhaust outlet channel communicating with said combustion chamber, an exhaust valve in an opening to said exhaust outlet channel, an exhaust recirculation line connected at one end to said exhaust outlet channel and at its other end to said intake channel, an exhaust throttle valve in said exhaust circulation line, for varying the flow passage of the exhaust recirculation line, a passage control device within said exhaust circulation line downstream of said exhaust throttle valve and controlled in synchronism with rotation of a crankshaft of said engine, whereby the passage control device is controlled such that exhaust gases from said exhaust circulation line are permitted to flow into the intake channel only within the period of time during which said inlet valve is closed in order to pre-store exhaust gases therein.

4,475,525

ORIFICE OF EXHAUST GAS RECIRCULATION SYSTEM

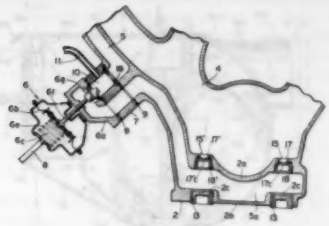
Yasuo Fukae, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

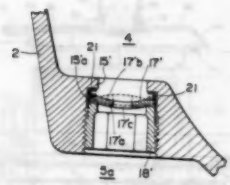
Filed Nov. 10, 1983, Ser. No. 550,356
Claims priority, application Japan, Nov. 16, 1982, 57-200929
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **5 Claims**

1. An exhaust gas recirculation system for an internal combustion engine, comprising

an exhaust gas recirculation passage extending from an ex-

haust passage of the engine to an intake passage of the engine for recirculating the exhaust gas of the engine, and





an orifice disposed in said exhaust gas recirculation passage, said orifice being made of a material capable of changing its shape in accordance with temperature change.

4,475,526

APPARATUS FOR GENERATING A SIGNAL TRAIN DEPENDENT ON ROTARY SPEED

Richard Schleupen, Ingersheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

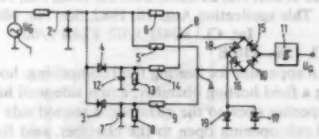
PCT No. PCT/DE82/00076, § 371 Date Jan. 27, 1983, § 102(e) Date Jan. 27, 1983, PCT Pub. No. WO83/00193, PCT Pub. Date Jan. 20, 1983

PCT Filed Apr. 1, 1982, Ser. No. 464,507

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127220

Int. Cl.³ F02P *3/04, 1/00*

U.S. Cl. 123—618 **18 Claims**



1. An apparatus for generating a digital signal train representative of rotary speed from the periodic voltage of an inductive transducer arrangement, in particular for controlling ignition systems of an internal combustion engine,

said signal generating apparatus having an inductive transducer arrangement (1), a voltage signal superposition stage (3–10, 12–19) connected to said transducer (1), and a threshold stage (11) connected to said superposition stage,

wherein, in accordance with the invention and in order to reduce the inherent systematic error which can result from variation of the amplitude of transducer output voltage as a function of rotary speed,

means are provided which shift the transducer voltage to a different absolute value in accordance with said output voltage amplitude, before it is delivered to the threshold stage (11), in such a manner that the switching point of the threshold stage (11) is invariant for a given rotary angle, regardless of the amplitude of said voltage.

4,475,527

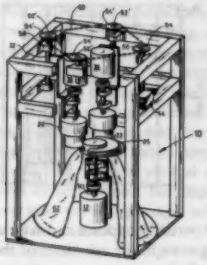
INGOT SLICING MACHINE AND METHOD

Yu Shen Kuo, La Crescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 11, 1982, Ser. No. 387,648

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—13 R **8 Claims**



1. A method of simultaneously slicing silicon boules into wafers, comprising: providing a stack of mutually spaced, coaxially aligned, juxtaposed circular blades, each blade having a cutting diameter slightly greater than the cutting diameter of the blade arranged immediately thereabove; supporting diametrically opposed pairs of elongated boules of silicon for rotation about axes parallel to the axis of the circular blades, and moving each pair of boules parallel to their axes into and away from the stack of blades while rotating said blades and said boules to slice wafers from the boules, whereby the stresses imposed on the blades incident to slicing the wafers are balanced.

4,475,528

PORTABLE COOKING APPARATUS

Gary W. Kuchenbrod, Armstrong, Ill. 61812

Filed Oct. 13, 1983, Ser. No. 541,531

Int. Cl.³ F24C *1/16*

U.S. Cl. 126—9 R **15 Claims**

1. A portable cooking apparatus comprising:

(a) two or more substantially planar cooking structures;

(b) hinge means connecting said cooking structures;

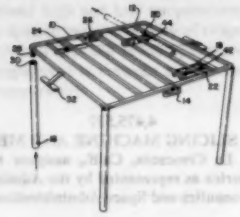
(c) a plurality of legs capable of detachable affixment to said cooking structures; and

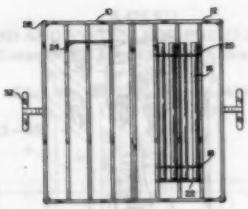
(d) a leg carrier assembly affixed to said cooking structures, including;

(i) at least two guide members, each of which contains at least one aperture of a size and shape sufficient to admit at least one of said legs, the guide members being affixed to a first cooking structure such that a leg may rest in the apertures of at least two guide members simultaneously;

(ii) at least two retaining elements, each retaining element

being affixed to a cooking structure such that, when the cooking apparatus is collapsed, each retaining element





at least partially opposes end-wise movement of a leg as said leg rests in the apertures of the guide members.

4,475,529

SOLID FUEL BURNING STOVE WITH EXTERIOR REAR WALL BAFFLE

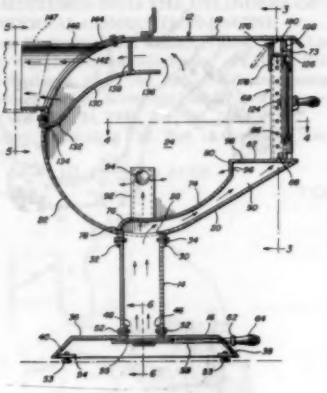
Orley J. Milligan, 2319 Crater Lake Ave., Medford, Oreg. 97501

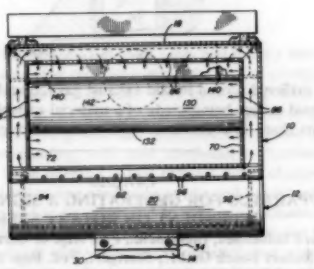
Division of Ser. No. 258,633, Apr. 29, 1981, Pat. No. 4,392,477. This application Apr. 15, 1983, Ser. No. 485,334

Int. Cl.³ F24C *1/14*

U.S. Cl. 126—77 **7 Claims**

1. A heater including a firebox for receiving and burning solid fuel therein, said firebox including a lower wall, a pair of spaced upstanding opposite side walls, a top wall extending between said side walls, a forwardly opening semi-cylindrical rear wall extending between said top and lower walls and between said opposite side walls and combustion air manifold means into which a combustion air inlet opens, said combustion air manifold means including means operative to horizontally rearwardly discharge combustion air into the central portion of said firebox from a forward elevated area therein, horizontally laterally discharge combustion air into the central portion of said firebox from elevated opposite side areas





thereof and vertically upwardly discharge combustion air into said firebox from a forward elevated area therein.

4,475,530

HEATING APPARATUS

Robert V. Albertson, 2100 Shadywood Rd., Wayzata, Minn. 55391

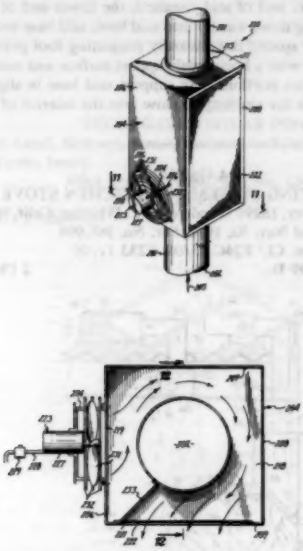
Division of Ser. No. 216,658, Dec. 15, 1980, Pat. No. 4,363,314. This application Aug. 16, 1982, Ser. No. 408,614

Int. Cl.³ F24H *3/02*; F24B *7/00*

U.S. Cl. 126—110 B **13 Claims**

1. An apparatus for heating fluid comprising: housing means having a fluid heating chamber, a first side wall having a fluid inlet opening open to the chamber, a second side wall having a fluid exit opening open to the chamber, said first side wall being located adjacent said second side wall, said first and second side walls having adjacent portions joined together, third side wall means joined to the first and second side walls, a top wall attached to the side walls, and a bottom wall attached to the side walls, said first and second side walls, third side wall means, top wall and bottom wall surrounding said fluid heating chamber, a casing having a passage for accommodating hot gas which heats the casing, said casing being mounted on the housing means and located in the fluid heating chamber, fluid moving means mounted on the first side wall of the housing means for moving fluid through the fluid inlet opening, heating chamber, and fluid exit opening, and partition means in said fluid heating chamber secured to said second wall and casing, said partition means including solid wall means extended between the casing and said second side wall, said solid wall means having a first edge portion secured to the casing, and a second edge portion secured to the second side

wall adjacent said fluid exit opening whereby all the fluid moved by the fluid moving means flows around the casing in



the heating chamber, said flowing fluid being heated by the casing.

4,475,531

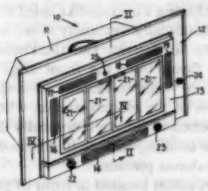
FIREPLACE UNIT

Roland T. Gerhart, Milford Township, Oakland County, Mich., assignor to IEM Ltd., Novi, Mich.

Continuation of Ser. No. 138,811, Apr. 9, 1980, abandoned. This application Jul. 19, 1982, Ser. No. 399,393

Int. Cl.³ F24B 7/00

U.S. Cl. 126—121 **11 Claims**



1. A fireplace unit, comprising: an inner fire box shell having a substantially horizontal bottom wall, a top wall, a back wall, opposite side walls and an open front; an outer fireplace shell within which said inner shell is contained, said outer fireplace shell having walls corresponding to said bottom, top, back and side walls of said inner shell and disposed in spaced relation thereto so as to form an air flow passage between said shells; a front wall closing the front end of said air flow passage, said front wall having a closeable front opening in registry with said open front of said inner shell, said front wall having room air inlet opening means located below said closeable front opening and communicating with the space between said bottom walls of said inner and outer shells, said front wall having heated air outlet opening means communicating with the space between said top walls of said shells; door means on said front wall for closing said front opening of said front wall, air supply means for supplying combustion air to the interior of said inner shell, the interior of said inner shell being isolated from the space between said inner and outer shells except for said air supply means; a conduit extending from the upper end of said inner shell for discharging combustion gases therefrom; a fan unit disposed in the space between said bottom walls of said inner and outer shells and located directly rearwardly of said room air inlet opening means, said fan unit comprising an inlet housing the lower end of which communicates with said room air inlet opening means, said inlet housing comprising a substantially horizontal upper wall located directly below, spaced downwardly from and extending substantially parallel with said bottom wall of said inner shell, said upper wall having an annular air inlet shroud extending downwardly therefrom partway to the lower end of said inlet housing, said shroud being defined by a downwardly and inwardly smoothly curved inner shroud wall defining a downwardly converging vertical passage having a circular air inlet opening of said shroud at its lower end, the upper end of said passage defining an enlarged circular air outlet opening of said shroud, said circular air inlet opening and said enlarged circular air outlet opening of said shroud being coaxial with the vertical central axis of said vertical passage; a direct drive rotatable fan disposed within said downwardly converging vertical passage, said fan being rotatable about a vertical axis coaxial with the vertical central axis of said vertical passage, said fan having a series of corresponding, circumferentially space-apart, radially outwardly extending fan blades, said fan blades each being smoothly arcuately upwardly curved when viewed from the radially outer end thereof, said fan blades each including a lower portion and an upper portion, said lower portion extending downwardly in said downwardly converging vertical passage and having a radially outer edge substantially conforming to the curvature of said shroud wall, said upper portion extending upwardly and radially outwardly from said lower portion into the space defined between said upper wall of said inlet housing and said bottom wall of said inner shell and surrounding said circular air outlet opening of said inlet housing, said fan being effective to move air from said inlet housing upwardly through said downwardly converging vertical passage and then direct the air horizontally into the space between said upper wall of said inlet housing and said bottom wall of said inner shell whereupon the air then flows through said air flow passage and becomes heated and is then discharged through said heated air outlet opening means.

4,475,532

COMBINED HEATER STOOL AND CARRYING CASE

Cecil M. Woods, 3351 S. 7700 West, Magna, Utah 84044

Filed Jun. 15, 1983, Ser. No. 504,756

Int. Cl.³ A61F 7/08

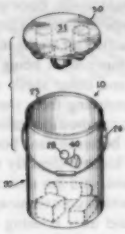
U.S. Cl. 126—204 **9 Claims**

1. A combined heater, stool, and carrying case wherein the device comprises:

an elongated receptacle member having an open end with a handle element disposed proximate thereto, and a shallow recess formed in the closed end of the receptacle member, and

a lid member adapted to sealingly engage the open end of the elongated receptacle member, and further provided with a

heat producing means secured to the underside of the lid element, wherein the heat producing means comprises at



least one fuel cylinder having a cap member operatively connected thereto via a flexible retaining means.

4,475,533

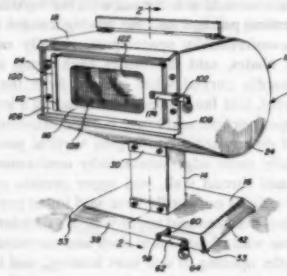
SOLID FUEL BURNING STOVE WITH PEDESTAL ENCLOSED AIR INTAKE

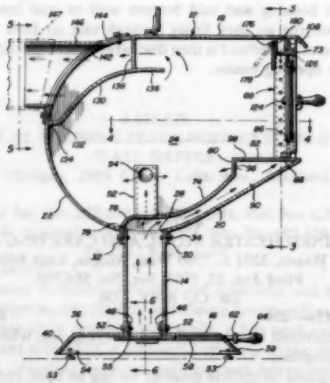
Orley J. Milligan, 2319 Crater Lake Ave., Medford, Oreg. 97501

Division of Ser. No. 258,633, Apr. 29, 1981, Pat. No. 4,392,477. This application Apr. 15, 1983, Ser. No. 485,333

Int. Cl.³ F24C *15/08*

U.S. Cl. 126—279 **7 Claims**





1. A heater including a firebox for receiving and burning solic fuel therein, said firebox including a downwardly opening central combustion air inlet for admitting combustion air into the interior of said firebox to support combustion of burnable fuel therein a tubular standard, said firebox being supported atop the upper end of said standard with the interior of said standard communicated with said combustion air inlet, a hollow downwardly opening and horizontally enlarged base carried by the lower end of said standard, the lower end of said standard opening downwardly into said base, said base including peripherally spaced downwardly projecting foot portions for engagement with a horizontal support surface and relative to which said foot portions may support said base in slightly elevated position for ambient air flow into the interior of said base.

4,475,534

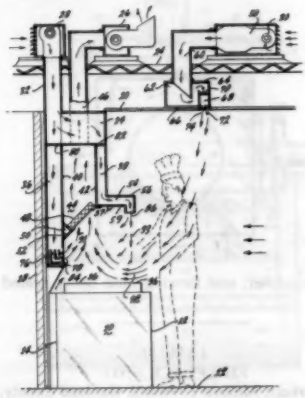
VENTILATING SYSTEM FOR KITCHEN STOVE

Daniel J. Moriarty, 15294 Woodcrest Dr., Whittier, Calif. 90604

Filed Nov. 30, 1978, Ser. No. 965,094

Int. Cl.³ F24C *15/08*; **F23J** *11/00*

U.S. Cl. 126—299 D **2 Claims**



1. In a kitchen stove ventilation system of the back shelf ventilator type in which a first stream of unconditioned air is discharged upwardly at the rear of a cooking surface of the kitchen stove and in which a second stream of conditioned make-up air flows from a region in front of the stove rearwardly over the front edge of the cooking surface to join with the first stream above the cooking surface to form a combined stream, the combined stream being drawn upward into an exhaust plenum, the improvement comprising:

a third stream outlet located above the front portion of the stove for discharing a curtain-like third stream of unconditioned air substantially vertically downwardly with sufficient velocity to restrict the thickness of the second stream as it flows over the front edge of the cooking surface but not with sufficient velocity to cut off the rearward flow of the second stream, whereby the second stream is pinched to form a rearwardly directed jet flowing above the cooking surface to transport cooking fumes toward the exhaust plenum;

a second stream outlet located in front of the stove and at a height greater than 6 feet above the floor;

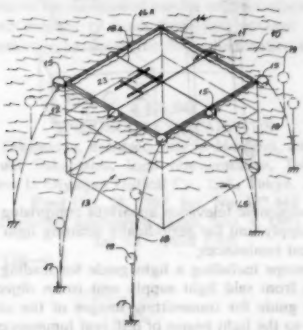
a conditioned air plenum having an underside, said second stream outlet communicating with said conditioned air plenum and located on the underside of said conditioned air plenum, said conditioned air plenum further including a hollow chamber having a first wall, and having a second wall opposite said first wall;

an inlet duct extending into said hollow chamber through said first wall and opening into said hollow chamber at a position nearer to said second wall than to said first wall; and,

an outlet duct extending into said hollow chamber through said second wall and opening into said hollow

chamber at a position nearer to said first wall than to said second wall, said outlet duct connected outside said hollow chamber to said second stream outlet.

4,475,535
SEGREGATED SOLAR POND
Gad Assaf, Rehovot, Israel, assignor to Solmat Systems, Ltd., Yavne, Israel
Filed Mar. 27, 1980, Ser. No. 134,659
Int. Cl.³ F24J 3/02
U.S. Cl. 126—415 43 Claims



1. A method for establishing a solar pond in a body of water comprising the steps of:

(a) establishing a collector containing water in the body of water such that the water in the collector is segregated from and does not mix with the water in the body of water but is in heat exchange relationship therewith;

(b) establishing an artificial halocline in the collector for absorbing heat which is transferred to a heat storage volume of water in the body of water below the collector, the average density of the water in the collector exceeding the average density of water in the heat storage volume; and

(c) inhibiting mixing of the water in said heat storage volume with other water in the body by establishing a vertical barrier between the heat storage volume and the body of water and establishing a horizontal barrier between the halocline and the heat storage layer.

3. In combination:

(a) a body of water having a region containing an upper lever of water defining a solar collector, and a lower level of water defining a heat storage volume;

(b) means for preventing horizontal transfer of water between the body and the region;

(c) means for preventing vertical transfer of water between the two levels; and

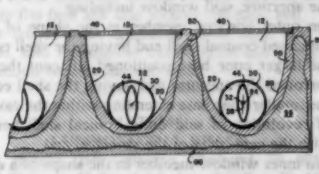
(d) means for rendering the upper level non-convective said last named means being a halocline.

42. A method for establishing a solar pond having a periphery in a body of water comprising preparing a non-convective layer of water that receives solar radiation, the average density of the non-convective layer exceeding the average density of the body of water establishing a vertical barrier along the periphery; establishing a horizontal barrier, in the body of water, extending to the vertical barrier; and floating said non-convective layer on the horizontal barrier such as to prevent intermixing of the non-convective layer with water in the body of water.

4,475,536
SOLAR COLLECTOR-SKYLIGHT ASSEMBLY
Richard E. Dame, Silver Spring, Md., assignor to Mega Engineering, Silver Spring, Md.
Filed Feb. 9, 1983, Ser. No. 465,155
Int. Cl.³ F24J 3/02
U.S. Cl. 126—419 8 Claims

1. A solar collector-skylight assembly adapted to be mounted on the exterior of a building, said assembly comprising a housing having end and side walls, a transparent top wall and a translucent bottom wall, a plurality of transversely extending fluid circulating pipes mounted within said housing, each pipe having a dark coated heat absorbing plate secured to the upper surface thereof, a plurality of parabolic reflectors mounted in said housing, each reflector comprising a pair of parabolic segments, each segment being integrally connected to the segment of the next adjacent reflector, each reflector being positioned adjacent a respective heat absorbing plate, for focusing the sun's rays on said plate, means interconnecting said parabolic reflectors, means connecting said interconnecting means to the end walls of said housing, and drive means connected to said interconnecting means for imparting rectilinear movement to said parabolic segments, whereby said parabolic reflectors are movable as a unit from a position wherein the sun's rays are focused on the heat absorbing plates to another position wherein the sun's rays are focused into the interior of a building upon which the assembly is mounted.

4,475,537
NONTRACKING PARABOLIC COLLECTOR APPARATUS
Mark C. Rogers, Baytown, and Michael Gill, Sugarland, both of Tex., assignors to Advanced Solar Systems, Midland, Tex.
Continuation of Ser. No. 324,516, Nov. 24, 1981, abandoned, which is a continuation of Ser. No. 48,448, Jun. 14, 1979, abandoned. This application Mar. 17, 1983, Ser. No. 476,176
Int. Cl.³ F24J 3/02; G02B 5/10
U.S. Cl. 126—438 11 Claims



1. A solar energy collection apparatus having:

a support;

at least one trough in the support, said at least one trough having an internal reflective surface comprising two oppositely disposed truncated parabolic sections rotated away from its vertical axis to create a wide angle of acceptance opening, and a reflective circular face joining the ends of said two parabolic sections which are opposite said acceptance opening, said reflective surface being molded with said support, said internal reflective surface having a focal line to which said internal reflective surface reflects incident solar energy;

a heat entrapment collector cylinder formed of glass which

is vacuum sealed and nested in said at least one trough and extending substantially along the focal line of said reflective surface such that a portion of the trough engages the heat entrapment collector cylinder therein which permits thermal expansion of said collector cylinder; and

at least one metallic tube mounted within the heat entrapment collector cylinder.

4,475,538

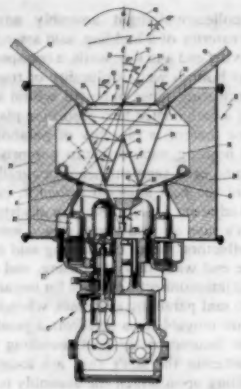
WINDOW FOR SOLAR RECEIVER FOR A SOLAR-POWERED HOT GAS ENGINE

Worth H. Percival, Oakton, and David N. Wells, Arlington, both of Va., assignors to United Stirling AB, Malmo, Sweden

Filed Nov. 30, 1983, Ser. No. 556,568

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—439 **6 Claims**



1. An improved solar receiver for conversion of solar radiation to thermal energy of the type including a heat exchanger for the transfer of heat out of the receiver, an insulated housing forming cavity surrounding the heat exchanger and an aperture in the housing to allow the influx of solar radiation, the housing having an axis constituting the centerline of the receiver and the center of the aperture and the center of the heat exchanger both being located on the centerline, the improvement comprising

a window for intercepting solar radiation passing through the aperture, said window including

(i) an outer window member in the shape of an inverted truncated conical shell and having the shell edge forming the larger cone base positioned adjacent the housing to surround the aperture and having the shell edge forming the smaller cone base extending within the cavity, the axis of revolution of said outer conical shell being colinear with the centerline of the receiver, and

(ii) an inner window member in the shape of a conical shell positioned within said outer conical shell and having the shell edge forming the inner shell conical base connected to the outer shell smaller base edge and having the vertex of the inner conical shell extending toward the aperture, the axis of revolution of said inner conical shell also being colinear with the centerline of the receiver, and

wherein the dimensions of said inner and outer conical shell window members are selected in relation to the dimensions of the aperture and cavity to provide at least three reflections within the cavity for at least 50% of the solar radiation initially intercepted but reflected by either of said inner and outer window members before any reflected solar radiation can pass back through the aperture and escape the receiver.

4,475,539

ENDOSCOPIC TELEVISION APPARATUS

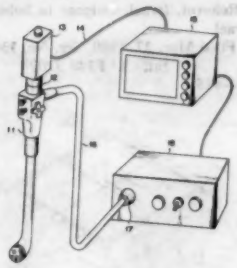
Yutaka Konomura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1981, Ser. No. 312,791

Claims priority, application Japan, Oct. 28, 1980, 55-150975; Oct. 28, 1980, 55-150976

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **6 Claims**



1. An endoscopic television apparatus comprising:

a light supply unit for periodically emitting light beams of different luminances;

an endoscope including a light guide for leading the light beams from said light supply unit to an object and an image guide for transmitting images of the object subjected to the light beams of different luminances;

a camera unit for converting the images transmitted by the image guide of said endoscope into video signals of different brightnesses corresponding to the different luminances;

means for extracting signal components within a given level range from each of the video signals from said camera unit;

synthesizing means for synthesizing the signal components extracted by said signal component extracting means to form video data; and

means for displaying the composite video signal from said synthesizing means as an image of said object.

4,475,540

ENDOSCOPE APPARATUS

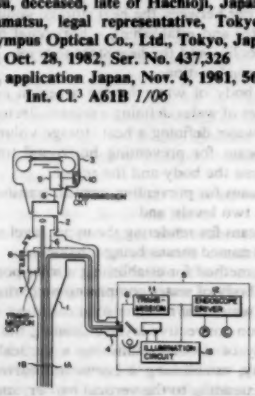
Takeshi Takamatsu, deceased, late of Hachioji, Japan, and by Tokuyuki Takamatsu, legal representative, Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,326

Claims priority, application Japan, Nov. 4, 1981, 56-176913

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **5 Claims**



1. An endoscope apparatus comprising:

an endoscope unit for observation in a body cavity;

a light source unit connected to said endoscope unit for generating a light illuminating the body cavity through a light guide of said endoscope unit;

a camera unit connected to an eyepiece section of said endoscope unit for photographing in the body cavity;

one of said units having first transmission means which becomes a control station unit, and the other of said units each having second transmission means which becomes a controlled station unit, said first transmission means having means for identifying that the controlled station unit is mounted on the control station unit having said first transmission means when said first transmission means receives self address codes, transmitted a first predetermined number of times by at least one of said second transmission means of the controlled station units, a second predetermined number of times from said at least one second transmission means of the controlled station units.

4,475,541

ENDOSCOPE APPARATUS

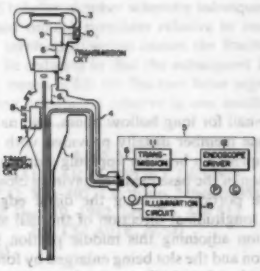
Takeshi Takamatsu, deceased, late of Hachioji, Japan, and by Tokuyuki Takamatsu, legal representative, Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,443

Claims priority, application Japan, Nov. 4, 1981, 56-176915

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **4 Claims**



1. An endoscope apparatus which comprises an endoscope unit for the observation of the interior of a body cavity, a light source unit coupled to the endoscope unit to deliver illumination into the body cavity through a light guide of the endoscope unit, and at least one optional unit coupled to at least one of the endoscope unit and the light source unit, said apparatus further comprising:

a controlling transmission circuit as a controlling station in one of said endoscope unit, said light source unit, and said optional unit; and

controlled transmission circuits as controlled stations in the other units,

said controlling station transmission circuit including means for registering the address of said unit connected thereto, and checking means for checking a fixed number of unregistered addresses of said address registering means for transmitting connection check signals every time an operation routine is completed,

each said controlled station transmission circuit including responding means for producing a response signal in response to said connection check signals, and

said controlling station transmission circuit further including means for recognizing the response signal of said responding means and registering on said unregistered address the address of an unregistered unit having the responsive controlled station transmission circuit.

4,475,542

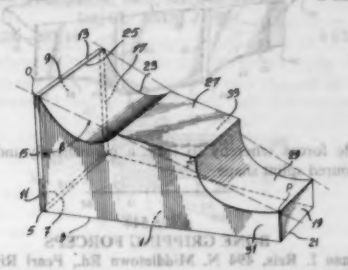
METHOD OF CHIROPRACTIC TREATMENT AND SHAPED BLOCKS THEREFOR

André Brossard, 964 rue Charlevoix, Boucherville, Quebec J4B 6J7, Canada

Continuation-in-part of Ser. No. 215,360, Dec. 11, 1980, abandoned. This application Feb. 25, 1983, Ser. No. 469,694

Int. Cl.³ A61H *39/00*

U.S. Cl. 128—69 **2 Claims**



1. Block intended for chiropractic treatment which comprises:

a base formed of a trapezoidal portion and a rectangular portion, unitary with said trapezoidal portion at the longer base of said trapezoidal portion;

a first substantially rectangular end face perpendicular to said base and merging with the end of said rectangular portion of said base;

an upper face parallel to said base and having the same dimensions as said rectangular portion of said base;

rectangular lateral faces connecting said base, said end face and said upper face;

a second substantially rectangular end face perpendicular to said base and merging with the shorter base of said trapezoidal portion;

an oblique portion between said upper face and said second end face, said oblique portion being generally inclined at about 60° with respect to the vertical and comprising:

a first upper inwardly curved section descending from the inner edge of said upper face;

a substantially intermediate flat 60° trapezoidal face portion following said first upper curved section;

said trapezoidal flat portion being lifted at its lower end so as to form an angle of between about 7° and 9° with respect to the plane of said oblique portion;

a second lower inwardly curved section between said intermediate flat face and said second end face; and

irregular lateral faces connecting said base, said oblique portion, said rectangular lateral faces and merging into said second rectangular end face.

4,475,543

LUMBOSACRAL BRACE

William R. Brooks, 260 Arlington, Elmhurst, Ill. 60126, and Irving C. Heinzel, 45 Brookdale La., Palatine, Ill. 60067

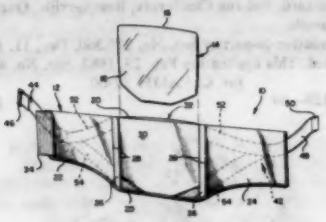
Filed Jan. 17, 1983, Ser. No. 458,467

Int. Cl.³ A61F *5/02*

U.S. Cl. 128—78 **3 Claims**

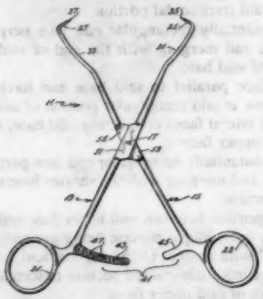
1. The method of providing an anatomic support which comprises the steps of: fashioning an elastic fabric belt arrangement with a pocket closed on three sides and having an open, selectively closable mouth; charging a selected quantity of viscously fluid, flowable, permanently hardenable, polymeric brace material into said pouch; closing the mouth of said pouch; immediately stretching and snugly strapping said belt arrangement around a patient's body region to be supported, tensile forces generated in said belt arrangement, as a result of stretching it, acting to cause said brace material to flow, while in its unhardened state, into intimate conformity with the

confronting, patient's body region; and allowing said brace material to harden in continuation of the application of said



tensile forces whereby to form a permanently individually contoured splint shape.

4,475,544
BONE GRIPPING FORCEPS
Norman I. Reis, 494 N. Middletown Rd., Pearl River, N.Y. 10965
Filed Feb. 23, 1982, Ser. No. 351,537
Int. Cl.³ A61F *5/04*; A61B *17/28*
U.S. Cl. 128—92 EA **7 Claims**



1. A bone clamp having a configuration of a forceps, comprising:

(a) first and second elongate arms having a pivot bearing in a scissors fashion and each arm having a longitudinal length;

(b) first and second finger grips at a proximal end of each of the first and second arms;

(c) a ratcheting mechanism consisting of a ratchet on the first arm adjacent to the first finger grip, and

(d) a ratchet grip on the second arm engageable against the ratchet as the finger grips are brought toward one another;

(e) bone-gripping portions of the first and second arms, each bone-gripping portion consisting of:

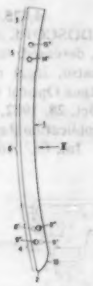
(1) terminal distal end parts which are turned inwardly to approximately 90° from said length to be collinear at at least one point within a range of engagement of the ratchet grip against the ratchet,

(2) an intermediate part of the bone-gripping portion on each forceps arm connecting the proximal end part with the remainder of the arm to separate the terminal distal ends, the separation being accomplished by the arms bending outwardly away from each other at the intermediate part, said intermediate bending occurring at about midway between said pivot bearing and said terminal distal end parts with the intermediate part of each said arm forming a continuous curve with a respective said bending until terminating at said terminal distal end parts, and

(3) a means to grip cortical bone tissue consisting of pointed ends provided on the distal ends portions, the means to grip permitting the bone clamp to pivot about the axis passing through pointed ends when bone tissue is being gripped in said manner; and

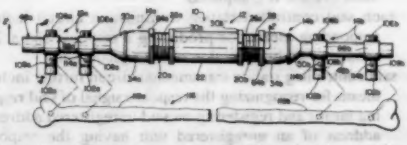
(f) a flexing property to the arms between the terminal distal end parts and the finger grips sufficient to maintain a biasing force between the terminal distal ends throughout said range of engagement.

4,475,545
BONE-NAIL
Hans G. Ender, Ferstelgasse 6/20, A-1090 Vienna, Austria
Filed Dec. 6, 1982, Ser. No. 447,243
Int. Cl.³ A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 BC **7 Claims**



1. Bone-nail for long hollow bones, said nail consisting of a tubular base member distally provided with a tip and proximally comprising a head for applying a driving tool, the distal edge portion of the base member having a closed cross section, the middle portion adjoining the distal edge portion being slotted in longitudinal direction of the nail and the proximal edge portion adjoining this middle portion having a closed cross section and the slot being enlarged by forcibly bending its edges such that the middle portion has a cross section which is greater than the closed cross section of the edge portions, said distal edge portion having a closed cross section being provided with two pairs of holes, both holes of one pair of holes being coaxially arranged on a common axis extending through the nail in transverse direction relative to its longitudinal direction and said coaxial common axes of said both pairs of holes being located in different planes transversely extending relative to the longitudinal direction of the nail and crossing one another under an acute angle.

4,475,546
EXTERNAL FIXATION APPARATUS
Stephen M. Patton, 3823 Gold St., Omaha, Nebr. 68105
Filed Jun. 23, 1983, Ser. No. 507,107
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 A **11 Claims**



1. An external fixation apparatus for the reduction and im-

mobilization of the proximal end segments of a fractured bone comprising:

a turnbuckle means, including opposed elongate links interconnected at the proximal ends thereof by a central span member, for adjustably changing the separation distance of said links by rotation of said span member;

a ball joint means attached to each respective distal end of each of said links, including an elongate tubular member extending substantially coaxially away from respective said links, for allowing limited lateral movement of the distal end of a respective said tubular member relative to the longitudinal axis of a respective said link;

a locking means for each said respective ball joint means, including a locking screw extending coaxially within said respective tubular member and having a screw head located adjacent the distal end of a respective tubular member, for selectively locking said ball joint means by rotation of said screw whereby said respective tubular member is immovably held in position relative to said respective link; and

a plurality of clamp means attached to respective said tubular members, each said clamp means being movable longitudinally relative to the respective said tubular member and being rotatable about the longitudinal axis of movement and having a bore therethrough in which a pin embedded at one end in the fractured bone segment is received, said clamp means being provided for locating and immovably holding a respective pin in said bore at a selected position along the length of the pin, and for immovably attaching said clamp means relative to the respective said tubular member whereby subsequent manipulation of said tubular members relative to one another and by said turnbuckle means causes the fractured bone segments to be reduced so that the subsequent locking of said locking means holds the fracture bone segments in a proper healing orientation relative to one another.

4,475,547

ANIMAL EAR SUPPORT DEVICE

James O. Cox, P.O. Box 107, Carthage, Miss. 39051

Filed Dec. 10, 1982, Ser. No. 448,513
Int. Cl.³ A01K *29/00*
U.S. Cl. 128—133 **5 Claims**

1. A brace for supporting the ears of a dog in erect position after ear crop surgery, comprising:

(a) a solid body having a base, side surfaces, and front and rear surfaces, and having the following configuration:

i. the base being transversely concave forming a passage from front to rear adapted to fit the crowned head of a dog,

ii. the side surfaces being flat and upwardly convergent at a slight angle from the base, and each having a lower edge which is upwardly curved from the front surface to the rear surface,

iii. the front surface being flat and extending upwardly from the base at substantially a right angle,

iv. the rear surface comprising a relatively short flat lower part extending upwardly from the base at substantially a right angle, and a relatively long flat upper part extending angularly upwardly from the upper end of the lower part toward the front surface, and

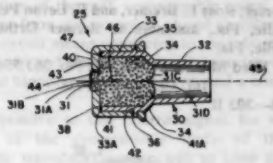
(b) adhesive means on each side surface for attaching the ears of a dog to the solid body.

4,475,548

FITTING FOR ENDOTRACHEAL TUBE APPARATUS AND METHOD OF MAKING THE FITTING

Rudolph Muto, 24 William St., Andover, Mass. 01810

Filed Jun. 1, 1982, Ser. No. 383,968
Int. Cl.³ A61M *25/02*
U.S. Cl. 128—207.14 **4 Claims**



1. A fitting for endotracheal apparatus to receive an endoscopic tube, or the like, said fitting comprising:

an elongated body of soft resilient cellular foam of generally bell, or mushroom shape, and of predetermined length, having, a flat outer end with a laterally extending enlarged lip therearound, an opposite, rounded inner end and an elongated cylindrical shank, of predetermined diameter between said lip and said rounded end;

a sleeve having a head with a circular outer end edge, a cylindrical interior recess, an inwardly flared section forming an annular, truncated conical partial closure to said recess and an elongated, hollow tapered stem, said head coaxially encompassing said body in said recess, said lip overlies the circular edge of said sleeve and;

a cap having an integral skirt fitting around said head and affixed thereto and having a top with an integral, inwardly extending peripheral rim, defining an opening and said lip is clasped between the circular edge and the peripheral rim;

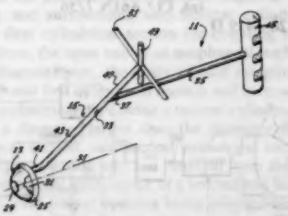
said foam body having a longitudinal slit pre-formed therein from end to end, being under longitudinal compression between said peripheral rim and said flared section, being under radial compression at said flared section and being under a relieved pressure at said opening.

4,475,549

ACETABULAR CUP POSITIONER AND METHOD

Indong Oh, 851 Lyndon St., South Pasadena, Calif. 91030

Filed Jan. 18, 1982, Ser. No. 340,028
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—303 R **14 Claims**



1. An acetabular cup positioner for positioning an acetabular cup during hip surgery on a patient to establish abduction and anteversion angles of the acetabular cup in the acetabulum, said acetabular cup positioner comprising:

acetabular cup engaging means for engaging the acetabular

cup and moving the acetabular cup in the acetabulum to provide the desired abduction and anteversion angles of the acetabular cup;

arm means coupled to the acetabular cup engaging means and manually movable to move the acetabular cup engaging means to position the acetabular cup in the acetabulum; and

said arm means including means for sighting along the axis of the patient to establish the anteversion angle.

4,475,550

HALO FOR STEREOTAXIC APPLICATIONS

Paul W. Bremer; Ross L. Bremer, and P. Levon Pentecost, all of Jacksonville, Fla., assignors to Bremer Orthopedics, Inc., Jacksonville, Fla.

Filed Mar. 30, 1982, Ser. No. 363,556
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 B **6 Claims**

1. A stereotaxic device comprising:

a frame, having four radiolucent substantially planar walls arranged in a quadrate in plan view;

radiopaque indicia means formed on said walls;

a portable and wearable halo assembly comprising a ring component and a plurality of skin-penetrating pins extending radially through said ring component and operatively engaging said ring component for positive positioning with respect thereto;

means for operatively fixing the position of said halo assembly to said frame walls to positively position the halo assembly in a predetermined position with respect to said walls; and

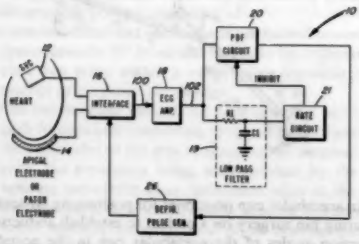
means for fixing said frame with respect to a radiotherapy machine.

4,475,551

ARRHYTHMIA DETECTION AND DEFIBRILLATION SYSTEM AND METHOD

Alois A. Langer, Pittsburgh, and Martin S. Heilman, Gibsonia, both of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Continuation of Ser. No. 175,670, Aug. 5, 1980, abandoned. This application Sep. 2, 1982, Ser. No. 414,353
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 D **37 Claims**



1. A method for delivering defibrillating energy to the heart of a patient experiencing abnormal cardiac rhythm, including ventricular fibrillation, which is characterized by an irregular ECG waveform, and high rate tachycardia and low rate tachycardia, both of which are characterized by regular R-waves occurring at generally stable rates, the deliverance of defibrillating energy taking place irrespective of the regularity of the ECG waveform representing such abnormal cardiac rhythm, said method comprising the steps of:

monitoring an ECG signal from the heart of the patient;

examining said ECG signal to detect said abnormal cardiac rhythm including ventricular fibrillation, high rate tachycardia, and low rate tachycardia;

examining said ECG signal to sense heart rate so as to distinguish between ventricular fibrillation and high rate tachycardia, on the one hand, and low rate tachycardia, on the other hand, said distinguishing being made without regard to the regularity or lack of regularity of the ECG waveform corresponding to said ECG signal;

issuing a defibrillating signal when both examining steps sense ventricular fibrillation or high rate tachycardia;

not issuing a defibrillating signal when both examining steps sense low rate tachycardia or normal sinus rhythm; and

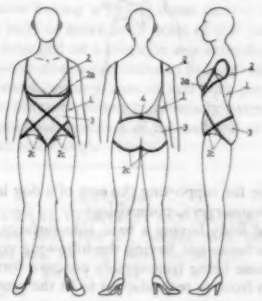
responding to said defibrillating signal by automatically delivering defibrillating energy to the heart of the patient.

4,475,552

CORE BELT ARRANGEMENT OF A WOMAN'S GARMENT

Hiroshi Yoshihara, 3-1, Nishiazabu 3-chome, Minato-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 354,425, Mar. 3, 1982,. This application Jun. 28, 1982, Ser. No. 392,829
Int. Cl.³ A41C *1/00*
U.S. Cl. 128—531 **19 Claims**

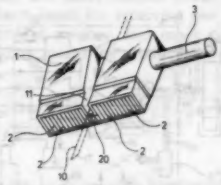


1. A core belt arrangement on a woman's garment comprising a fabric material formed as a woman's garment, and a flexible, ribbon-like core belt disposed on said fabric, said core belt having a first section passing underneath the breasts to provide support and prevent swaying of the breasts, said core belt having a second section passing underneath the buttocks to provide support and prevent swaying of the buttocks, said core belt having a third section crisscrossing the abdominal region to provide support for the abdominal region.

4,475,553
ULTRASONIC NEEDLE HOUSING PROBE WITH CONTINUOUS LOCATOR ARRAY

Keiki Yamaguchi; Shinichi Sano; Hiromichi Akimoto; Takao Higashizumi; Mineo Yamanaka, and Takahiko Ishihara, all of Musashino, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Jul. 9, 1982, Ser. No. 396,784
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **4 Claims**



1. An ultrasonic probe, for use with a needle in ultrasonography, comprising

a support structure having a first end of substantially rectangular shape and substantially flat surface, a second end, and at least a first side and a second side extending between said first and second ends, said first side having a groove defined therein and extending from at least said first end and to said second end and being open at said first end, said groove serving to guide said needle; and

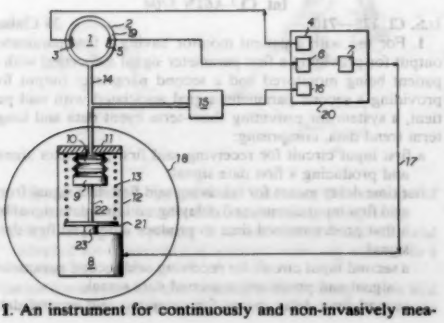
a plurality of elongated ultrasonic transducer elements disposed on said surface of said first end outside of said open end of said groove in said first end and substantially parallel to each other and extending substantially from said first side to said second side of said first end; wherein a number of said plurality of said elements extend from said groove opening

to said second side, and wherein said first side is opposite said second side.

4,475,554
NONINVASIVE CONTINUOUS BLOOD PRESSURE METER

Barry W. Hyndman, Amsterdam, Netherlands, assignor to Nederladse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

PCT No. PCT/EP81/00063, § 371 Date Oct. 28, 1981, § 102(e) Date Oct. 28, 1981, PCT Pub. No. WO81/03606, PCT Pub. Date Dec. 24, 1981
PCT Filed Jun. 5, 1981, Ser. No. 317,896
Claims priority, application Netherlands, Jun. 19, 1980, 8003548
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—664 **9 Claims**



1. An instrument for continuously and non-invasively measuring the absolute arterial blood pressure of a subject, in which the entire arterial blood pressure waveform is reproduced, comprising:

a wrap-on flexible finger cuff having an inflatable portion which incorporates a photoelectric plethysmogram underneath said inflatable portion of the cuff and including an infrared transmitter and infrared receiver located such that they will be on opposite sides of a finger about which the cuff is wrapped,

an electro-pneumatic transducer which incorporates an air-filled compressible space pneumatically connected to the inflatable cuff by flexible tubing such that the inflatable portion of the cuff, compressible space, tubing and transducer form one complete closed air-filled space,

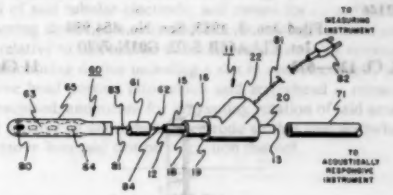
electronic circuit means connected to the infrared transmitter, receiver, and electro-pneumatic transducer for generating said blood pressure waveform and a control signal; and

means, responsive to said control signal, for varying the volume of the compressible space of the electro-pneumatic transducer fast enough to keep the instantaneous value of a plethysmogram signal of said plethysmograph close to a predetermined fixed reference value.

4,475,555
UNIVERSAL MEASURING ATTACHMENT FOR ESOPHAGEAL STETHOSCOPES

Gerald S. Linder, 16693 Charmel La., Pacific Palisades, Calif. 90272

Continuation of Ser. No. 949,646, Oct. 10, 1978, abandoned. This application May 29, 1980, Ser. No. 154,580
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—670 **6 Claims**



1. A measuring attachment for use with an esophageal stethoscope having an open proximal end and a closed distal end, comprising in combination:

(a) a coupling adapter composed of a body of resilient polymer material having an outside wall surface and having an input and an output opening;

(b) a hollow cylindrical bore extending completely through the body of said resilient adapter between said input and said output openings for the passage of sound waves therethrough, the portion of said adapter adjacent said input opening and surrounding said hollow cylindrical bore being a first cylindrical section for coupling to, and removal from, the open end of an esophageal stethoscope of a first diameter size, the body of said coupling adapter adjacent said first cylindrical section and surrounding said hollow cylindrical bore being a second cylindrical section having a diameter larger than the diameter of the first cylindrical section, said second cylindrical section being adapted for insertion into and removal from the open end of an esophageal stethoscope of a second and larger diameter size, said output opening being adapted for coupling to an acoustically responsive instrument;

(c) a lateral passageway extending from the outside wall surface of said resilient coupling adapter and through the body of said adapter into said hollow cylindrical bore;

(d) a pair of electrically-conductive wires situated within and extending through said lateral passageway, a portion of said hollow cylindrical bore, and out through said input

opening, said pair of conductive wires having first and second pairs of end terminals, each pair of said end terminals being remotely situated with respect to said coupling adapter;

(e) a temperature-sensing element coupled to said first pair of end terminals, said temperature-sensing element being positioned with respect to said resilient coupling adapter by manually sliding said pair of conductive wires through said lateral passageway, said temperature-sensing element and said first pair of end terminals being adapted for insertion into and removal from the open end of an esophageal stethoscope, said pair of electrically-conductive wires being of sufficient stiffness to permit the positioning and retention of said temperature-sensing element at any desired, selected position within the esophageal stethoscope, said temperature-sensing element being retained in its selected position within the esophageal stethoscope upon the coupling of the first or second cylindrical section of said resilient coupling adapter to the open end of the esophageal stethoscope; and

(f) means attached to said second pair of end terminals for coupling the output from said temperature-sensing element to a remotely-located temperature-measuring instrument.

4,475,556

RAPID MEASUREMENT OF COLLOID OSMOTIC EQUILIBRIUM PRESSURE

Theodore R. Reiff, Apt. C-301, 77 Pond Ave., Brookline, Mass. 02146

Filed Jan. 3, 1983, Ser. No. 454,984
Int. Cl.³ A61B *5/02*; **G01N** *7/10*
U.S. Cl. 128—673 **11 Claims**

9. A method of controlling intravascular colloid osmotic pressure of a system comprising the steps of:

a. inserting into the system a probe with a solvent chamber bordered by a semipermeable pressure dome;

b. measuring any change in pressure in the solvent chamber with a pressure transducer;

c. measuring the ambient pressure of the fluid in which the osmometer is immersed;

d. transmitting a pressure signal from the pressure transducer at the solvent chamber to an input for a computing device;

e. computing the rate of change of the osmotic pressure within the solvent chamber as changed by passage of fluid across the semipermeable membrane;

f. predicting a theoretical osmotic equilibrium pressure based on said rate of change;

g. recording both the data from the first pressure transducer and the calculated prediction on a recording device; and,

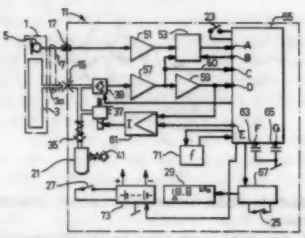
h. controlling at least one valve to meter the rate of fluid solution infusion to the system.

4,475,557

METHOD AND APPARATUS FOR PERFORMING BLOOD PRESSURE MEASUREMENTS

Rudolf Hatschek, Fribourg, and Werner Bernau, Neuchatel, both of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Apr. 23, 1982, Ser. No. 371,367
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116387
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—681 **6 Claims**



1. A sphygmomanometer comprising:

an arm band fixable on a limb of a person, said arm band including a deformable pressurizable airtight chamber,

means for increasing the pressure in said chamber,

means for decreasing the pressure in said chamber,

means responsive to said pressure for producing a signal representative of said pressure;

means responsive to sounds produced in a zone containing said arm band for producing signals representative of the intensity of said sounds;

providing means responsive to each said sound representative signal whose amplitude surpasses a threshold value for providing a validation signal, said providing means including determining means responsive to said pressure representative signal for determining said threshold value in dependence on the pressure in said chamber; and

a memory;

means responsive to: (a) said pressure representative signal and (b) said validation signals for storing in said memory the value of said pressure representative signal at the appearance of the first and of the last ones of said validation signals, respectively.

4,475,558

SYSTEM FOR PROVIDING SHORT-TERM EVENT DATA AND LONG-TERM TREND DATA

R. Wade Brock, Stone Mountain, Ga., assignor to Healthdyne, Inc., Marietta, Ga.

Continuation-in-part of Ser. No. 383,296, May 28, 1982,. This application Jul. 9, 1982, Ser. No. 396,627
Int. Cl.³ A61N *5/04*
U.S. Cl. 128—710 **38 Claims**

1. For use with a patient monitor having a first parameter output for providing a first parameter signal associated with a patient being monitored and a second parameter output for providing a second parameter signal associated with said patient, a system for providing short-term event data and long-term trend data, comprising:

a first input circuit for receiving said first parameter signal and producing a first data signal;

frst time delay means for receiving said first data signal from said first input circuit, and delaying said first data signal by a first predetermined time to produce a delayed first data signal;

a second input circuit for receiving said second parameter signal and producing a second data signal;

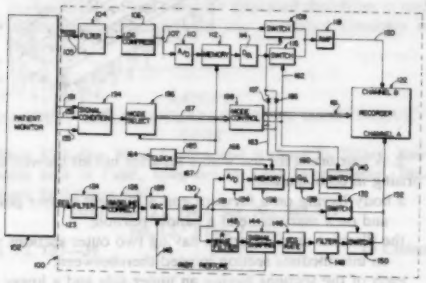
second time delay means for receiving said second data

signal from said second input circuit, and delaying said second data signal by a second predetermined time to produce a delayed second data signal;

a recorder having two recording channels, a high recording speed, and a low recording speed;

switch means for selectively connecting said second data signal, said delayed first data signal and said delayed second data signal to said recorder; and

mode control circuit means connected to said switch means for controlling the selective connection of signals to said recorder and controlling the recording speed of said recorder, said mode control circuit including at least one alarm input for receiving one alarm signal from said patient monitor, said mode control circuit means including means for producing a first mode of



operation in which at least said second data signal is recorded on one of said recording channels at said low recording speed to provide said long term trend data, means for producing a second mode of operation in which said delayed first data signal and said delayed second data signal are recorded, respectively, on said two recording channels at a high speed, and mode change means for producing operation in said first mode in response to a first condition of said alarm input and for producing operation in said second mode for a predetermined period of time in resonse to a second condition of said alarm input,

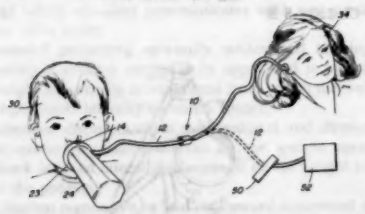
wherein one of said first and second data signals is an ECG signal and the other of said first and second data signals is a respiration signal.

4,475,559

APPARATUS AND METHOD FOR DETECTING APNEA

Mary Horn, 232 Aspinwall Ave., Brookline, Mass. 02146

Filed Oct. 9, 1981, Ser. No. 310,092
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—716 **7 Claims**



1. Apnea detecting apparatus for detecting the cessation of airflow through the nostrils of a human being comprising:

tubing having an opening in a wall thereof and one end adapted for connection in a sound receiving manner to a human ear, and

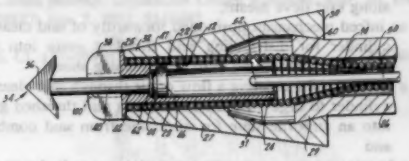
means for supporting said opening in said tubing within said airflow, said supporting means comprising a feeding bottle having a nipple and said tubing is supported by said bottle near said nipple.

4,475,560

TEMPORARY PACING LEAD ASSEMBLY

Peter P. Tarjan, and Stanley R. Hess, both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Apr. 29, 1982, Ser. No. 372,910
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **21 Claims**



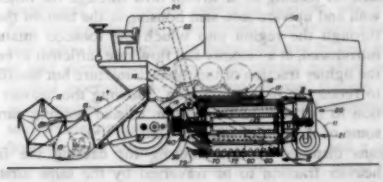
1. A pacing lead assembly comprising: a pervenous electrode assembly; a terminal member; a flexible conductor electrically coupled between said pervenous electrode assembly and said terminal member; an insulative flexible sheath around said conductor, said sheath extending between said pervenous electrode assembly and said terminal member; means for electrically coupling said terminal member to a pulse generator, said electrode assembly including a tubular electrode having an insulated shank portion and an exposed electrically conductive head portion; an anchoring device associated with said tubular electrode and including an arrowhead; means for extending said anchoring device to an anchoring position outward of said tubular electrode; and means for retracting said anchoring device to a retracted, non-anchoring recessed position relative to said tubular electrode; said means for retracting said anchoring device including a slot in said electrically conductive head portion into which said arrowhead is retracted and recessed; and means for preventing rotation of said arrowhead relative to said tubular electrode so that said arrowhead will move into said slot on retraction thereof.

4,475,561

ROTARY CLEANING MECHANISM FOR COMBINES

Frans J. G. C. Decoene, and Gilbert J. I. Strubbe, both of Zedelgem, Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 17, 1982, Ser. No. 408,982
Int. Cl.³ A01F *12/44*
U.S. Cl. 130—27 R **21 Claims**



1. In a combine having a frame; threshing means mounted on said frame for threshing and separating grain crop from waste material in crop material fed thereto; crop gathering means in operative communication with said threshing means for collecting unthreshed crop material and feeding said crop material to said threshing means; cleaning means mounted on said frame for receiving threshed grain from said threshing means and cleaning unwanted residue from said threshed grain; and drive means for operatively powering said threshing means, said

crop gathering means and said cleaning means, an improved cleaning means comprising:

a cleaning cylinder mounted within said combine for rotation about an axis of rotation, said cleaning cylinder including a plurality of elongated, individually reciprocable cleaning shoes disposed around the periphery of said cylinder generally parallel to said axis of rotation for receiving and cleaning grain, said cleaning shoes having sieve means to permit the passage of clean grain therethrough, said sieve means being reciprocable in a generally fore-and-aft direction to move said grain rearwardly along said sieve means;

an infeed mechanism positioned forwardly of said cleaning cylinder for distributing said threshed grain into said cleaning cylinder and onto said cleaning shoes;

a fan means for creating a flow of air through said cleaning cylinder to urge unwanted residue in said threshed grain into an airborne state for discharge from said combine; and

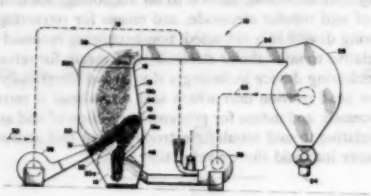
a housing means surrounding said cleaning cylinder to collect cleaned grain from said cleaning shoes.

4,475,562

METHOD AND APPARATUS FOR SEPARATING TOBACCO MIXTURE INTO LIGHTER AND HEAVIER FRACTIONS

Richard E. Thatcher, Chester; Horace L. Odom, Bon Air, and Ronald L. Edwards, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 16, 1981, Ser. No. 312,014
Int. Cl.³ A24C *1/02*
U.S. Cl. 131—110 **13 Claims**



4. Apparatus for separating a tobacco mixture comprising a lighter and a heavier fraction into the respective fractions thereof, said apparatus comprising:

a housing, including a pair of opposed generally upright walls;

means for introducing the tobacco mixture through one said wall into said housing;

means for feeding an airstream flow through the other said wall and upward into said housing at the bottom thereof, through the region into which the tobacco mixture is introduced, at a velocity and flow rate sufficient to entrain the lighter fraction of the tobacco mixture but insufficient to retain the heavier fraction, allowing the heavier fraction to fall toward the bottom of said housing carrying some of the lighter fraction with it;

means disposed in said housing for causing the falling heavier fraction to be traversed by the same airstream flow a second time for separating from the heavier fraction any of the lighter fraction carried down by the heavier fraction;

means for maintaining a suction lift in the upper portion of said housing to increase the velocity of the airstream flow therethrough;

a separator unit;

means for conveying the airstream flow from said housing to said separator unit; and

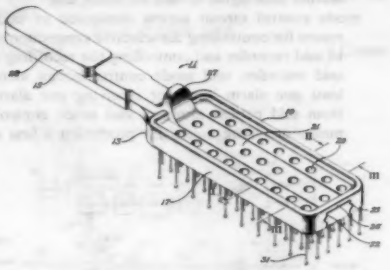
means for collecting the heavier fraction in said housing.

4,475,563

HAIR BRUSH WITH MOVABLE BRISTLE ROWS

Donald S. Martin, 3800 Westcliff Rd., S. Fort Worth, Tex. 76109

Filed Nov. 8, 1982, Ser. No. 439,871
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—85 **4 Claims**



2. A hair brush for use with a separate hot air blower, comprising in combination:

a body having on a forward end a filament carrier portion and on a rearward end a handle portion;

the filament carrier portion having two outer sections with an intermediate section located therebetween;

each of the sections having an upper side and a lower side with at least one row of filaments protruding from the lower side;

at least one of the sections having a plurality of apertures extending therethrough from the upper side to the lower side for the passage of hot air between the filaments from the hot air blower;

the intermediate section and the outer sections being movable with respect to each other from a rearward position in which the forward end of the intermediate section is flush with the forward ends of the outer sections to a forward position in which the forward end of the intermediate section protrudes past the forward ends of the outer sections; and

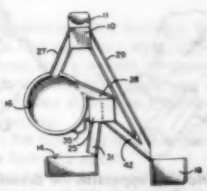
bias means for urging the sections from the forward position to the rearward position.

4,475,564

COIN HANDLING APPARATUS

Harold E. Koester, Las Vegas, and Robert E. Davids, Reno, both of Nev., assignors to International Game Technology, Reno, Nev.

Filed Jan. 4, 1982, Ser. No. 336,836
Int. Cl.³ G07D *9/04*
U.S. Cl. 133—8 R **8 Claims**



1. In a coin operated apparatus having a coin acceptor, a hopper payout assembly including a hopper and hopper drive means, chute means for directing coins from said coin acceptor to said hopper, a coin storage chamber, a coin tray, and chute

means for directing rejected coins from said coin acceptor directly to said coin tray, the improvement comprising

a coin diverter assembly located for receiving coins from said hopper having a diverter member, first coin directing means communicating said diverter assembly with said coin storage chamber and second coin directing means communicating said diverter assembly with said coin tray, said diverter member normally positioned in a first position wherein said coin storage chamber is in communication with said hopper via said first coin directing means, and movable to a second position wherein said coin tray is in communication with said hopper via said second coin directing means,

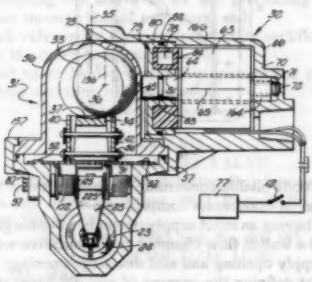
said hopper payout assembly having sensing means for detecting an overfilled hopper condition whereby said hopper is driven and coins are dispensed therefrom to said coin storage chamber until said overfilled condition is relieved.

4,475,565

MAGNETICALLY ACTUABLE SHOCK RESPONSIVE UNIT

William F. Keller, West Covina, and Richard D. Sibley, Anaheim, both of Calif., assignors to Koso International, Inc., Sante Fe Springs, Calif.

Filed May 24, 1982, Ser. No. 381,329
Int. Cl.³ F16K *17/36*
U.S. Cl. 137—39 **13 Claims**



1. The combination comprising:

a valve having a body containing a passage through which fluid flows and a valve element movable relative to said body between a closed position blocking said fluid flow and an open position permitting such flow;

a weight;

a housing connected to said valve body and containing a chamber within which said weight is movably received and which chamber communicates with said passage in the valve body;

a pedestal projecting upwardly within said housing and having a shallow recess at its upper end in which said weight is normally received and from which the weight is displaceable laterally by shock forces;

an element disposed about said pedestal and displaceable downwardly relative thereto by the weight upon said shock induced lateral displacement of the weight relative to the pedestal;

mechanism responsive to said downward movement of said element disposed about the pedestal to release said valve element for closing movement;

said housing having a wall of non-magnetic material; and

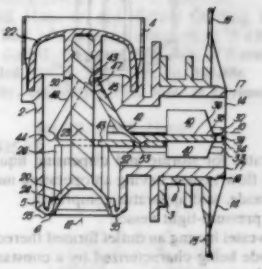
means located at an outer side of said wall at a location to produce a magnetic field passing through the wall and to said weight at an inner side thereof and to magnetically displace the weight relative to the housing in a relation closing said valve element without subjection to said shock forces.

4,475,566

PRESS TAPS

Kenneth R. Haines, East Croydon, England, assignor to Waddington & Duval Holdings Limited, London, England

Filed Mar. 9, 1982, Ser. No. 356,494
Claims priority, application United Kingdom, Mar. 30, 1981, 8109827; Jun. 1, 1981, 8116683
Int. Cl.³ F16K *13/04, 17/40*
U.S. Cl. 137—68 R **8 Claims**



1. A tap attachable to a fluid container, fluid in said container being initially retained within said container by a rupturable diaphragm interposed between said container and said tap when said tap is attached to said container, said tap comprising

a valve casing that includes a duct opening at one end at a fluid outlet and at the other end at a fluid inlet, said rupturable diaphragm being interposed between said fluid inlet and said container when said tap is attached to said container,

a valve for normal open and close operation of said tap, said valve comprising a seat, and a valve member seating on said seat, said valve controlling fluid flow out said outlet during normal operation of said tap,

a push button connected to said valve for manually opening said valve, said valve being normally biased closed until and unless said push button is pressed against said closure bias,

a diaphragm piercer slidably positioned in said duct, said diaphragm piercer being movable, when said tap is attached to said container, from an initial storage position where fluid flow through said tap is prevented by said diaphragm to a normal operating position where fluid flow through said tap is permitted as controlled solely by said valve, said diaphragm being ruptured by said piercer as said piercer moves from said storage position to said normal operating position, said piercer thereby being positioned in rupturable relation with said diaphragm in said normal operating position, and

a first abutment associated with said piercer and a second abutment associated with said push button, initial operation of said push button to open said tap causing contact between said first and second abutments to move said piercer from said initial storage position to said normal operating position, said piercer thereafter remaining in said normal operating position during subsequent operation of said push button so that said piercer moves only on initial pressing of said push button against said normal valve bias and does not move upon subsequent open and close operation of said valve by subsequent pressing of said push button.

4,475,567

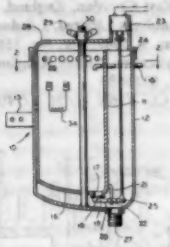
TURBO LUBRICATION SYSTEM

Robert W. Kiser, General Delivery, Kingshill, St. Croix, V.I. 00850

Division of Ser. No. 166,244, Jul. 7, 1980, Pat. No. 4,363,214. This application Sep. 13, 1982, Ser. No. 417,623

Int. Cl.³ G05D *11/00*

U.S. Cl. 137—110 **11 Claims**



1. Apparatus for storing and dispensing liquid in a closed, pressurized flow system having an operating mode and a non-operating mode, said apparatus comprising:

an outer pressure-tight vessel;

an inner vessel having an outlet formed thereon; said operating mode being characterized by a constant flow of said liquid from said outer vessel to said inner vessel via said system;

said inner vessel smaller than and positioned within said outer vessel;

means for directing said liquid to said inner vessel during said operating mode;

means for pouring said liquid from said inner vessel to said outer vessel during said operating mode;

means for retaining a charge of said liquid within said inner vessel when said operating mode ceases; and

means for draining said charge to reach said outlet of said vessel automatically in response to commencement of said operating mode.

4,475,568

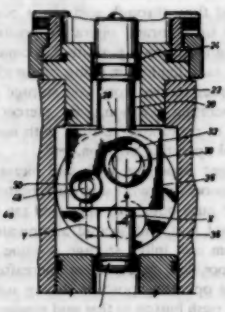
PRESSURE REDUCING AND REGULATING VALVE

Ronald L. Loup, Clarkston, Mich., assignor to Koomey, Inc., Brookshire, Tex.

Continuation-in-part of Ser. No. 339,554, Jan. 15, 1982, Pat. No. 4,444,216. This application Mar. 22, 1983, Ser. No. 478,125

Int. Cl.³ G05D *16/00*

U.S. Cl. 137—116 **10 Claims**



1. In a pressure reducing and regulating valve having,

a body having a body cavity, a seal container movable in the cavity, said container having primary and vent seals, at least one flow plate in the body positioned adjacent the container and having primary, secondary and vent ports, the improvement in seal container comprising,

said primary and vent seals positioned on the container on opposite sides of the central axis of the container thereby allowing the container to be of a smaller size thereby reducing the pressure forces applied against the interior of the body, and

said primary and vent seals spaced on opposite sides of the central axis at locations for reducing the side loading forces of the seals acting around the central axis as the container is moved.

4,475,569

FLOAT CONTROLLED CONDENSATE DISCHARGE DEVICE

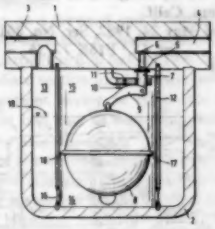
Werner Föller, Stuhr, Fed. Rep. of Germany, assignor to Gestra Kondensatableiter GmbH & Co. KG, Bremen, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 485,876

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215459

Int. Cl.³ F17T *1/20*

U.S. Cl. 137—194 **11 Claims**



1. A float controllable condensate discharge device responsive to a level of condensate comprising;

a housing having an input supply opening, a discharge opening, and a walled flow chamber communicative with said input supply opening and said discharge opening;

a valve seat defining the opening of said discharge opening within said flow chamber;

a closure element cooperating with said valve seat and movable between an opened and closed position relative thereto, wherein in the closed position, said element rests on said valve seat in sealing relationship,

a float disposed in said flow chamber and movable along a stroke distance within said chamber,

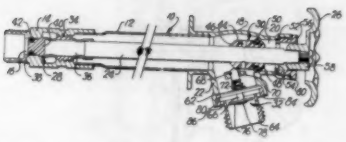
lever means coupling said float with said closure element and having a force transmission ratio applied to said closing element that is proportional to the stroke distance of said float, said chamber operating as a condensate throughput chamber with said float dividing said flow chamber into upper and lower zones and defining therebetween, a throttle aperture communicating with said zones and formed along the periphery of said float, and the wall of said flow chamber;

said flow chamber having inflow opening means communicative with the inlet opening for receiving the condensate to be discharged, said inflow opening means being formed upstream of said throttle aperture, said valve seat and said closure element being disposed in said interior chamber downstream of said throttle aperture so when the condensate fills said flow chamber to a predetermined level, said float will move downstream into the upper zone of said flow chamber and raise said closing element off said valve seat to permit the condensate to be drained through said throttle aperture into the discharge opening of said housing.

4,475,570
ANTI-SYPHON FREEZELESS WATER HYDRANT

Daniel W. Pike, Mission; Phillip J. Crawley, Overland Park; John L. Marshall, Lenexa, all of Kans., and Steve A. Martin, Grandview, Mo., assignors to Prier Brass Manufacturing Co., Kansas City, Mo.

Filed Oct. 16, 1981, Ser. No. 312,139
Int. Cl.³ F16K 24/02
U.S. Cl. 137—218 18 Claims



1. In a water hydrant having an elongated tube provided with an inner housing having a cylindrical water inlet bore, an outer housing having a cylindrical air inlet bore and a laterally extending water outlet spout disposed inwardly of the air inlet bore, a rotatable stem reciprocable in the tube and the outer housing, terminating in an exterior operating member, and a plurality of stem-actuated valves including:

a water valve connected to the stem in the inner housing for controlling the flow of water from the water inlet bore to the tube;

an air valve connected to the stem in the outer housing for controlling the inflow of air and precluding outflow of water through the air inlet bore; and

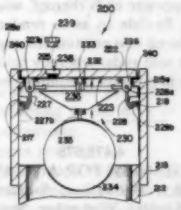
a check valve in the spout for precluding backflow of water into the outer housing,

said air valve having means for opening the check valve during operation of said member.

4,475,571
SEWER RELIEF VALVE

James M. Houston, Jr., 651 Brighton Dr., Lawrenceville, Ga. 30245, and John W. Baker, 6851 Roswell Rd. NE. G-20, Atlanta, Ga. 30328

Filed Jun. 7, 1983, Ser. No. 502,187
Int. Cl.³ F16K 31/18, 33/00
U.S. Cl. 137—430 28 Claims



12. A sewer relief valve comprising:

a coupling member adapted to connect to a sewer line, said coupling member including an upper end defining a material flow opening;

a lid selectably connectable to said coupling member to obstruct said material flow opening of said coupling member;

means within said coupling member for locking said lid in obstruction of said material flow opening of said coupling member;

float means comprising a buoyant member slidably disposed within said coupling member; and

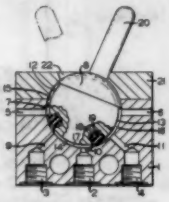
means for venting a build-up of air pressure within said coupling member through said upper end while said lid is locked in obstruction of said material flow opening of said coupling member, so that compressed air is vented from within said coupling member to allow a back flow of sewage to rise within said coupling member and displace said float means,

whereby displacement of said float means in response to said backflow of sewage within said coupling member positively unlocks said lid and permits said lid to be opened so as to unblock said material flow opening, thus permitting said backflow of sewage to escape through said material flow opening, and upon interruption of said backflow of sewage, said lid is permitted to automatically relock to obstruct the material flow opening.

4,475,572
MULTIWAY VALVE DEVICE

Walter Brausfeld, Hanover, and Helmut Göttling, Isernhagen, both of Fed. Rep. of Germany, assignors to WABCO Steuerungstechnik GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,486
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046095
Int. Cl.³ F16K 11/087
U.S. Cl. 137—625.23 11 Claims



1. A multiway valve device comprising:

(a) a housing having a spherical cavity formed partly in a body portion of said housing and partly in a cover portion thereof that interfaces with said body portion along a plane passing through a point displaced from the center of said spherical cavity, said body portion having at least three fluid pressure passages opening into said spherical cavity;

(b) a ball valve operably disposed in said spherical cavity and corresponding in size thereto;

(c) a single, ring-shaped sealing element carried on said ball in sealing engagement with the wall of said spherical cavity in said body portion, said at least three passages being arranged such that a different two of said at least three passages open into said spherical cavity adjacent the area of said ball valve enclosed by said sealing element and the other of said at least three passages opens into said spherical cavity adjacent an area of said ball valve on the side of said sealing element opposite said enclosed area when said ball valve is rotated about at least one axis of rotation thereof to one or the other of two operative positions to thereby establish fluid pressure communication between a selected two of said passages;

(d) at least one vent passage in said body portion opening into said cavity adjacent an area of said ball valve on the side of said sealing element opposite said enclosed area; and

(e) an annular recessed area surrounding said ball valve at the equator thereof via which fluid pressure communication is established between said other of said at least three passages and said vent passage in said one or the other of said two operative positions, the width and depth of said recessed area being such that the maximum dimension of a chord of a circle formed by the perimeter of said ball valve is less than the opening of said spherical cavity in

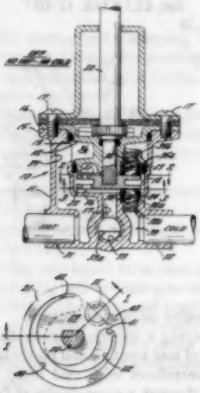
said body portion, so as to permit passage of said ball valve through the opening at the interface of said body and cover portions when the cover portion is removed.

4,475,573

HOT AND COLD MIXING VALVE FOR FEEDING A SHOWER HEAD, BATH TUB OR THE LIKE

Clarence B. Hindman, Morgantown, W. Va., assignor to Sterling Faucet Co., Schaumburg, Ill.

Filed May 9, 1983, Ser. No. 493,076
Int. Cl.³ F16K *11/07, 11/06, 11/02*
U.S. Cl. 137—625.41 5 Claims



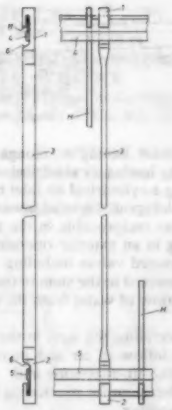
1. A hot and cold water mixing valve for connection to hot and cold water lines for feeding a shower head, bath tub or the like comprising a hollow valve body having a stem rotatable therein from an off position, upper and lower valve discs spaced axially from one another to provide a mixing space between them and coupled to the stem for rotation in unison, means defining an upper inlet opening in the valve body terminating at the upwardly presented face of the upper disc, means defining a lower inlet opening in the valve body terminating at the downwardly presented face of the lower disc, the inlet openings being in substantial alignment with one another in the axial direction, each of the discs having an arcuate through-opening of tapering width so as to define a wide head and a narrow tail subtending a control arc of at least 180° and with a dead sector between the tail and head, means defining an outlet port in the valve body in communication with the mixing space between the discs, the through-openings in the two discs being oriented head-opposite-tail in complementary overlapping relation so that the dead sectors are simultaneously alignable with the inlet openings to define the off position for the valve and so that movement of the stem from the off position exposes one of the inlet openings at its maximum width and the other inlet opening at its minimum width with progressive rotation of the stem gradually reversing the proportion of exposed width and hence the ratio of hot to cold water which flows through the outlet port thereby gradually changing the water temperature while maintaining the total flow substantially constant.

4,475,574

MOVABLE INTERMEDIATE SUPPORT FOR A WEAVING HEDDLE FRAME

Hans Baumann, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Sep. 29, 1982, Ser. No. 426,880
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3202006
Int. Cl.³ D03C *9/06*
U.S. Cl. 139—92 2 Claims



1. In a weaving heddle frame having upper and lower frame staves including parallel heddle carrying rods vertically spaced a predetermined distance apart, vertical end support members respectively interconnecting opposite ends of said frame staves together, a plurality of weaving heddles having hooked ends respectively engaging said rods, and at least one intermediate support member lying between said end support members and parallel thereto and having recessed opposite ends engaging said rods, the improvement wherein said intermediate support member is solely of vibration absorbing material and comprises a body member integrally formed with hooked ends forming end loops at said opposite ends thereof, said vibration absorbing material being flexible so as to render the hooked ends capable of being placed into position for engaging said rods by being hooked over said rods, whereby said intermediate support member when in position transmits tensile forces between the rods.

4,475,575

CATCHING MECHANISM FOR A WEAVING MACHINE

Frantisek Jankovsky, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 17, 1982, Ser. No. 408,925
Claims priority, application European Pat. Off., Sep. 30, 1981, 81810395.4
Int. Cl.³ D03D *47/24*
U.S. Cl. 139—439 9 Claims

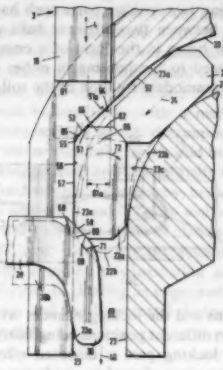
1. A catching mechanism for transferring a gripper projectile to a return transport means; said mechanism comprising

a housing having a curved channel for guiding a series of received projectiles from one end to an opposite terminal end, said channel including an outer wall and a recess in said outer wall for receiving a foremost one of the series of projectiles in a position parallel to a direction of ejection from said channel;

a pivotal lock pawl disposed in said channel at said terminal end for releasably holding the foremost projectile in said position in said channel;

a rectilinear guide; and

an ejector reciprocally mounted in said guide for movement into said channel parallel to said direction of ejection to



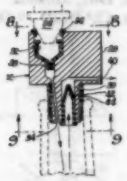
eject the foremost projectile from said channel upon pivoting of said lock pawl from said channel.

4,475,576

WINE PRESERVATION SYSTEM

Philip E. Simon, 10072 Roscoe Blvd., Sun Valley, Calif. 91352

Filed Sep. 3, 1982, Ser. No. 414,710
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—98 **3 Claims**



1. A wine bottle stopper for purging oxygen from a wine bottle, and then remaining in the neck of the wine bottle to replace the cork. comprising:

(a) an upper stopper portion;

(b) a lower stopper portion integral with said upper stopper portion and being tapered to fit through the opening and into the neck of a wine bottle to replace the cork, said lower portion having a resilient seating sleeve to seal against the insides of the bottle neck;

(c) an intake port defined in said stopper communicating between the outside and inside of said bottle and having an expanded upper end to seat against the dispensing head of an inert gas dispenser;

(d) said intake port having an expanded portion defining an intake check valve seat;

(e) an evacuation port defined in said stopper communicating between inside and outside of said bottle and having an expanded portion defining an evacuation check valve seat; and,

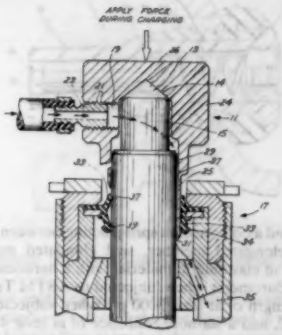
(f) each of said check valves comprising a resilient tubular sleeve with a pinched downstream end permitting gases to pass only from within the tube out through the pinched end.

4,475,577

METHOD AND APPARATUS FOR PRESSURIZING FLUID SHOCK ABSORBERS OR SPRINGS

Joseph Cubalchini, St. Charles, Ill., assignor to Maremont Corporation, Carol Stream, Ill.

Continuation-in-part of Ser. No. 389,598, Jun. 18, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 567,134
Int. Cl.³ F16F *9/00*
U.S. Cl. 141—349 **4 Claims**



1. Apparatus for introducing a gas under pressure to a pressurized, piston receiving, working chamber, a cylindrical piston rod extends out from the working chamber and a piston rod seal prevents pressurizing gas within the chamber from leaving the rod end portion of the working chamber as the piston rod moves operably with respect to said seal and said working chamber, the apparatus comprising:

head means including a first chamber for receiving the top of the piston rod, said head means for receiving a force to apply a corresponding force to the piston rod moving the piston rod into the chamber;

gas inlet means including an opening formed in said head means and communicating with said first chamber, said gas inlet means for receiving gas under pressure into said first chamber;

seal penetrating means depending from said head means and including a second chamber of cylindrical shape of a diameter slightly larger than the diameter of the piston rod for receiving the piston rod and forming an annular gas path between the piston rod and the inner surface of said penetrating means, said annular gas path communicating with said first chamber;

a tip structure formed at the end of said penetrating means for contacting the piston rod seal as the seal penetrating means is moved relative to the piston rod seal, said tip structure forcing the seal outwardly from the piston rod permitting movement of the penetrating means between the seal and the piston rod, the seal slidably sealingly engaging the external surface of said penetrating means.

4,475,578

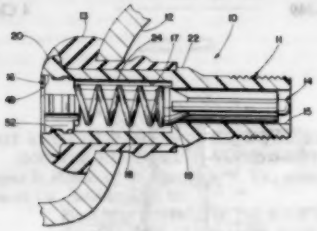
TIRE VALVE ASSEMBLY

Charles Nidle, Durham, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 8, 1982, Ser. No. 433,349
Int. Cl.³ B60C *29/00*
U.S. Cl. 152—415 **7 Claims**

1. A tire valve assembly comprising a hollow unitary stem member; means surrounding said stem member for mounting said stem member within a rim hole of a vehicle wheel with the stem member extending outward of the rim, an elongated member received within said stem member, a seal element formed on said elongated member as an integral part thereof and sealingly engageable with a portion of said stem member to

prevent the passage of air through said stem member, an actuating pin element formed on said elongated member as an integral part thereof and engageable by means external to said stem member to move said elongated member to a position wherein said seal element is out of engagement with said portion of said stem member, a retainer received within said stem



member, and a compression spring acting between said retainer and said elongated member, said elongated member being formed of an elastomeric material with a hardness of between 40 and 80 durometer when subjected to ASTM Test D-2240, a tensile strength of at least 3000 psi when subjected to ASTM Test D-412, and a Bashore resilience of at least 48 percent.

4,475,579

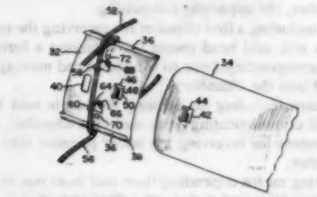
VENETIAN BLIND ASSEMBLY

Robert F. Bassett, 126 Grandview Ter., Batavia, N.Y. 14020

Filed Oct. 1, 1982, Ser. No. 432,197

Int. Cl.³ E06B *9/38*

U.S. Cl. 160—178 R **10 Claims**



1. A venetian blind assembly which comprises a plurality of flexible, resilient slats and a plurality of brackets, at least one pair of said brackets being provided for each of said slats, said brackets each having grooves confined along the edges thereof for receiving the edges of different ones of said slats, and detent means with a catch and a latch in the opposing sides of said brackets and slats, respectively, which cooperate with each other with said latch latching over and into said catch to releasably connect said brackets and slats each to the other upon inserting said slat into said grooves until said latch latches over and into said catch to engage each said bracket and slat and by deflecting said slats and releasing said latch and catch to release each said slat from the bracket engaged therewith.

4,475,580

MECHANISM FOR A ROLLER BLIND

Petrus J. Hennequin, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

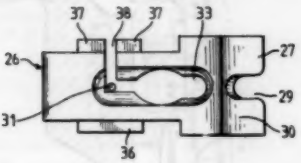
Continuation of Ser. No. 266,102, Jan. 19, 1981,. This application Aug. 12, 1983, Ser. No. 522,553

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001489

Int. Cl.³ E06B *9/208*

U.S. Cl. 160—308 **8 Claims**

1. A mechanism for a roller blind, said mechanism comprising a housing, a cord pulley rotatably mounted in the housing, a ball cord passed over the cord pulley so as to have two pieces of cord hanging down, one from each side of the pulley, and a locking element which is located on the housing and interacts with one of the two pieces of cord hanging down, said locking element including two locking parts each having a U-shaped slot engagable between two adjacent balls of the cord, the locking element being in the form of a component which is reversibly fastened to the housing in either of two different positions to accommodate rotation of the roller blind in either



of two directions and the locking element when in one or the other of the two different positions being fastened at a location whereby each locking part is disposed effective always to interact with one piece of cord in one fastened position of the locking element and with the other piece of the cord in the other fastened position of the locking element and the two locking parts being on the same side of a vertical plane passing through the centre of the housing and parallel to the axis of rotation of the cord pulley.

4,475,581

METHOD AND APPARATUS FOR FABRICATING GLAD INGOTS

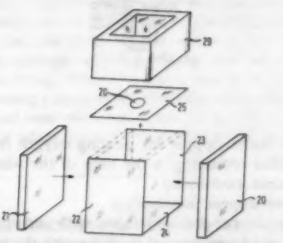
Hans-Jürgen Langhammer, Ritterhude, Fed. Rep. of Germany, assignor to Klöckner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,268

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1981, 3103240; Mar. 13, 1981, 3109602

Int. Cl.³ B22D *19/00*

U.S. Cl. 164—100 **14 Claims**



1. In a method of fabricating clad metal ingots, more particularly clad slabs, comprising the steps of forming an upright tubular hollow body corresponding to the dimensions of the finished slab, said body being fomed by assembling together a pair of opposed metal side plates of cladding material of a predetermined thickness, and metal side sheets each of a thickness less than said predetermined thickness;

inserting said hollow body into an external ingot mold having side walls parallel to and spaced from said side plates and said side sheets and having a bottom wall parallel to and spaced from the bottom end of said body;

providing a quantity of fine-grained refractory insulating material in the space between said body and said mold; and

then casting the finished slab by filling said hollow body with a molten base metal;

the improvement comprising the steps of, prior to inserting

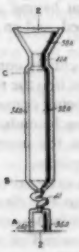
said body into said mold, sealing said bottom end of said body with a metal bottom wall united with said side plates and said side sheets; placing a metal cover on the top end of said body; providing an open filling gate in said cover plate through which the hollow body is filled with the base metal; seal welding said cover plate to said side plates and said side sheets prior to filling said hollow body with the base metal; and coating, before casting, the inner surface of said hollow body with a material having a high-melt characteristic which decomposes only when melted with the molten base metal, said bottom wall and said cover having a thickness substantially the same as the thickness of said side sheets; whereby, because of the seals between said side plates, said bottom wall and said cover, any gaps between said side plates of cladding material and the base metal after casting are inaccessible to the atmosphere thereby avoiding any oxidation at the interface thereof and further facilitating an improved bond between said side plates and the base metal during a subsequent rolling of the slab.

4,475,582

CASTING A METAL SINGLE CRYSTAL ARTICLE USING A SEED CRYSTAL AND A HELIX

Anthony F. Giamei, Middletown; Richard W. Salkeld, South Windsor, and Neal P. Anderson, Broad Brook, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 27, 1982, Ser. No. 343,084
Int. Cl.³ B22C 9/04; B22D 25/00
U.S. Cl. 164—122.2 **11 Claims**



1. The method of casting a single crystal article using a mold filled with molten metal, a seed crystal and movement of a solidification interface along an axis of the mold, wherein the mold has an article section for forming the article and a starter section for holding a seed, the sections lying along the mold axis, characterized by rotating the solidification interface velocity vector at least 90 degrees about the mold axis, as the solidification interface moves from the starter section to the article section, the rotation measured as the vector is projected into a plane perpendicular to the mold axis.

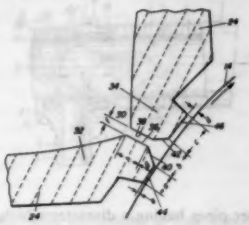
7. Apparatus for directional solidification of a single crystal article by epitaxial growth from a seed crystal which comprises a mold having a starter section containing a seed crystal and an article section, characterized by a selector section lying along an axis connecting the article section and the starter section, the selector section having a passageway with opposing end openings into the article and starter sections, the passageway preventing line of sight between the openings and having a rotation in space of at least 90 degrees as measured by the passageway projection into a plane perpendicular to the axis.

4,475,583

STRIP CASTING NOZZLE

S. Leslie Ames, Sarver, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 148,441, May 9, 1980, abandoned. This application Oct. 25, 1983, Ser. No. 545,115
Int. Cl.³ B22D 11/06, 11/10
U.S. Cl. 164—423 **11 Claims**



1. An apparatus for continuously casting metal strip comprising:

a tundish for receiving and holding molten metal,

a nozzle comprising a slotted element disposed in the tundish with the longitudinal extend of the slot approximating the width of the strip to be cast, said slot having substantially uniform cross-sectional dimensions throughout the longitudinal extent thereof,

a cooled casting surface at least as wide as the strip to be case, disposed outside the nozzle, moveable past the nozzle in a direction substantially perpendicular to the longitudinal axis of the slot,

said slot defined between a first lip and a second lip of the nozzle, and having an inner portion near the tundish and an outer portion adjacent the casting surface,

said first lip and said second lip having substantially planar inside surfaces, facing one another at the inner portion of the slot, said inside surfaces are parallel to one another at least at the inner portion of the slot and diverging from one another at the outer portion of the slot, the width of the outermost divergent portion being in excess of four times the width of said slot, as measured between inner parallel facing surfaces,

and

said first lip and said second lip having bottom surfaces facing the casting surface at a standoff distance less than about 0.120 inch, the bottom surface of said first lip having a length at least twice the width of said inner portion of said slot.

4,475,584

DOUBLE-TUBE RADIATOR

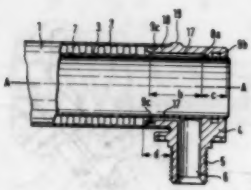
Hans Martin, Stuttgart, and Kurt Scharpf, Mönsheim, both of Fed. Rep. of Germany, assignors to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 30, 1981, Ser. No. 307,297
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038346
Int. Cl.³ F28F 7/00
U.S. Cl. 165—76 **11 Claims**

1. A pipe cooler comprising at least one double pipe which has inner and outer pipes arranged concentrically one inside the other with distributor members interconnecting the inner and outer pipes at their ends, each distributor member including a neck having a feed channel which extends perpendicularly to the axis of the pipes and through which fluid to be cooled flows, each distributor member being attached in tightly sealed manner by cylindrical connecting zones adapted to fit coaxially to the ends of the inner and outer pipes which form the double pipe, each distributor member having a cham-

ber communicating with the feed channel disposed between the cylindrical connecting zones for the pipes,

said chamber being part of a bore which extends coaxially relative to the axis of the pipes and which provides, on one side of the feed channel, a connecting zone for the inner pipe, and a connecting zone for the outer pipe which includes a cylindrical portion concentric with said inner



and outer pipes having a diameter which is less than the internal diameter of the outer pipe but greater than the external diameter of the inner pipe,

said cylindrical connecting zone for the outer pipe being an externally disposed part of the distributor member surrounding the bore,

said cylindrical connecting zones for the pipes including annular grooves for receiving sealing rings.

4,475,585

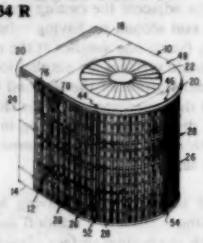
AIR CONDITIONING AND HEAT PUMP CABINETS WITH REMOVABLE COIL GUARDS

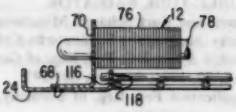
Russell W. Hoeffken, Belleville, Ill., assignor to Snyder General Corporation, Red Bud, Ill.

Filed Jun. 11, 1981, Ser. No. 272,447

Int. Cl.³ F28F *19/00*

U.S. Cl. 165—134 R **3 Claims**





1. A cabinet for air conditioning, heat pumps or like equipment including a heat exchanging peripheral coil, a base member, a top plate member, and spaced apart substantially stiff structural members extending between and secured to said base and top members and including a plurality of spaced apart apertures formed therein for engagement with at least one coil guard adapted to be mounted on said cabinet and disposed across a space formed between said structural members, said coil guard comprising a flexible member characterized by sets of spaced apart crossed lengths of interconnected wire members, one set of said wire members extending in one direction and having end portions projecting beyond another set of wire members extending in another direction, said end portions of said wire members extending in said one direction forming pins, each of said pins are insertable in one of said apertures, respectively, said coil guard being separated from said structural members by flexing said coil guard to remove said end portions of said one set of wire members from said apertures, and said coil guard being mounted on said cabinet by flexing said coil guard and reinserting said end portions of said one set of wire members into engagement with said apertures, respectively, and whereby the flexure of said coil guard comprises the sole means of mounting said coil guard on and removing said coil guard from said cabinet.

4,475,586

HEAT EXCHANGER

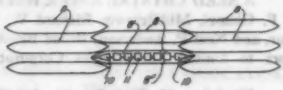
Hubert Grieb, Germering, and Wilfried Klussmann, Dachau, both of Fed. Rep. of Germany, assignors to MTU Motoren-Und Turbinen Union Munchen GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 89,825, Oct. 31, 1979, abandoned. This application Mar. 26, 1982, Ser. No. 362,575

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907810

Int. Cl.³ F28D *7/06*; F28F *1/04, 1/42*

U.S. Cl. 165—134 R **8 Claims**



1. A heat exchanger for heating compressed air by hot gas which flows in a particular direction through a region, comprising:

a main tube arrangement having an inlet section, for compressed air to be heated, and an outlet section, for heated compressed air, and

a plurality of individual curved conduits projecting from the main tube arrangement into the region of hot gas flow, one end of each conduit being connected to said inlet section and the other end of each conduit being connected to said outlet section, so that the compressed air to be heated flows through the conduits,

each conduit having an external cross-sectional shape, in a plane perpendicular to the direction of compressed air flow through it, which is elongated in the direction of hot gas flow, the upstream end of said cross-sectional shape being tapered toward the upstream direction of hot gas flow and the downstream end of said cross-sectional shape being tapered toward the downstream direction of hot gas flow,

the exterior surfaces of the conduits being spaced from one another in all directions within a plane parallel to the hot gas flow, so that the hot gas can flow completely around each individual conduit,

the conduits being arranged in rows, each row containing a number of side-by-side conduits nested within one another, and each two successive conduits in each row defining between their tapered ends a tapered space for accommodating the tapered end of a conduit in the next adjacent row, the tapered ends all being spaced apart to permit flow of hot gas between the conduits,

the conduits being arranged with the lengths of their cross-sectional shapes at an acute angle to the longitudinal axis of the main tube arrangement, and

the interior of each conduit having at least two compressed air guide channels, each of the channels having a generally triangular cross-sectional shape and occupying one of the tapered ends of the conduit, and a cross piece extending across the width of the conduit between the two channels.

4,475,587

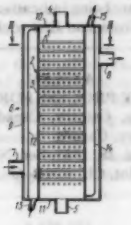
HEAT EXCHANGER

Boris P. Vasiliev; Nikolai L. Borisov; Mikhail K. Semenov; Ivan K. Ponomarev; Galina B. Tyryshkina, and Igor V. Gorbatenko, all of Belgorod, U.S.S.R., assignors to Belgorodsky Zavod Energeticheskogo Mashinostroenia, U.S.S.R.

Filed Oct. 30, 1981, Ser. No. 316,875

Int. Cl.³ F28F 9/22

U.S. Cl. 165—140 8 Claims



1. A heat exchanger comprising:

a plurality of tubes arranged in at least two side-by-side vertically adjacent planes to carry at least one fluid for heat exchange, axes of tubes in one plane being transverse to axes of tubes in a next vertically adjacent plane;

an elongate frame for said tubes open at two sides to form an inlet and outlet for the medium that is to be heated or cooled and having side walls in which the ends of said tubes are held;

a housing having wall means including side wall means and end wall means, said housing surrounding said frame and having an inlet and outlet for at least one fluid for heat exchange, said housing engaging said frame with the wall means of said housing and the side walls of said frame defining collector and distribution chambers intercommunicating through one portion of said tubes;

at least one first partition wall made of a shaped plate arranged within said collector chamber along a portion of the side wall of said frame and attached on the edges thereof to said portion of the frame side wall and defining with the same portion of the frame side wall at least one further collector chamber communicating with another portion of said tubes and having an inlet for one of at least one fluid for heat exchange; and

at least one second partition wall made of a shaped plate arranged within said distribution chamber along a portion of the side wall of said frame and attached on the edges thereof to said portion of the frame side wall and defining with the same portion of the frame side wall at least one further distribution chamber communicating through said another portion of said tubes with said at least one further collector chamber and having an outlet for one of at least one fluid for heat exchange,

wherein each one of the first and second partition walls extend in a direction substantially perpendicular to the axis of the tubes in the vertically adjacent planes along substantially the whole length of the frame holding the tubes, is secured only to said frame along the length thereof, and is free of contact with said housing side wall means.

4,475,588

HEAT EXCHANGER WITH TUBES FIXED AT BAFFLES

John L. Tsou, Berlin, Wis., assignor to McQuay Inc., Minneapolis, Minn.

Filed Sep. 28, 1981, Ser. No. 306,242

Int. Cl.³ F28F 9/00

U.S. Cl. 165—159 4 Claims

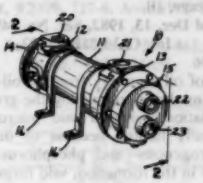
1. A heat exchanger comprising:

a shell;

a plurality of heat exchange tubes positioned within the shell;

means connected to the end portions of said tubes and to said shell, respectively, to form a flow path for one fluid within the tubes, and a flow path for another fluid within the shell in heat exchange relationship with the fluid in the tubes;

at least one baffle positioned in said shell at an intermediate position along said tubes with said tubes passing there-



through, said baffle comprising at least three rigid plates positioned together in stacked relationship, said plates having corresponding clearance holes through which the tubes pass, sized to permit insertion of the tubes during assembly; and

means securing said plates with their corresponding clearance holes laterally offset so that the edges thereof engage different portions of the outer surface of the tubes.

4,475,589

HEAT EXCHANGER DEVICE

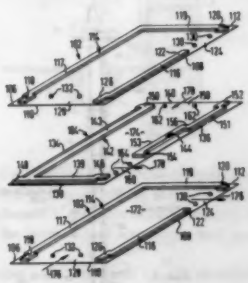
Saburo Mizuno, Nagoya; Yutaka Kozawa, Inazawa, and Tosikazu Ogata, Aichi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 15, 1981, Ser. No. 302,350

Claims priority, application Japan, Jan. 21, 1981, 56-8291; Jan. 22, 1981, 56-8193

Int. Cl.³ F28F 3/08

U.S. Cl. 165—166 5 Claims



1. A core for a heat exchanger device comprising:

a stack of parallel plates each of said plates being formed from a single heat-conductive sheet, each plate having corrugations formed therein for channeling fluid between successive pairs of said plates, said corrugations of pairs of successive plates being relatively laterally offset from each other to provide separation and support of the plates by the contacts of the corrugations of each sheet with the plate immediately above or below, wherein said plates are rectangles and said corrugations of each plate include substantially like L-shaped corrugations along a pair of adjoining sides, a first leg of each L-shaped corrugation running along substantially the entire length of corresponding sides of successive plates and the second leg of the L-shaped corrugations being on opposite ends of the successive plates, and other corrugations running along

corresponding sides opposite said first legs and leaving openings in said latter corresponding sides adjoining the ends of the second legs of the L-shaped corrugations, the fourth side of each plate being open for fluid flow.

4,475,590

METHOD FOR INCREASING OIL RECOVERY

Lewis R. Brown, Starkville, Miss., assignor to The Standard Oil Company, Chicago, Ill.

Filed Dec. 13, 1982, Ser. No. 449,080
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—246 **15 Claims**

1. A method of oil recovery from an oil-bearing subterranean formation involving stimulating the growth of an in-situ microbial population, wherein said microbial population's growth is partially limited because of deficiencies in the amounts of nitrogenous- and phosphorus-containing compounds available in the formation, said formation being penetrated by at least one injection well and at least one producing well, comprising:

(a) injecting into said formation an aqueous nitrogenous solution;

(b) injecting into said formation an aqueous phosphorus-containing solution;

(c) adjusting the amount of injected aqueous nitrogenous solution and aqueous phosphorus-containing solution to control the growth of said microbial population, and

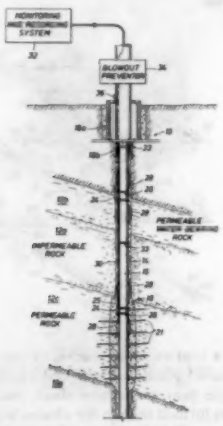
(d) injecting a drive fluid into said formation to displace oil to said production well.

4,475,591

METHOD FOR MONITORING SUBTERRANEAN FLUID COMMUNICATION AND MIGRATION

Claude E. Cooke, Jr., Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Aug. 6, 1982, Ser. No. 405,964
Int. Cl.³ E21B *47/06*
U.S. Cl. 166—254 **17 Claims**



1. A method for completing and monitoring a well which traverses a series of rock strata, to obtain data useful in the detection of flow away from a selected rock stratum traversed by said well of a portion of a fluid injected into said selected rock stratum, said method comprising the steps of:

attaching a first pressure transducer to the outer surface of casing adapted to be positioned within the borehole of said well, said pressure transducer being adapted to measure fluid pressure, the position of said first pressure transducer on said casing being controlled to ensure that upon said casing being fixedly positioned in said borehole, said first pressure transducer is positioned a spaced axial distance along said borehole away from said selected rock stratum;

setting said casing within said borehole;

cementing the annulus intermediate said casing and the face of said borehole, and allowing said cement to cure;

perforating said casing at the interval where said casing traverses said selected rock stratum;

injecting said fluid into said selected rock stratum through said perforations; and,

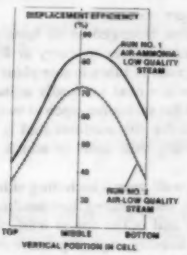
monitoring the output of said transducer, an increase in the monitored pressure being indicative of flow of a portion of said fluid away from said first rock stratum.

4,475,592

IN SITU RECOVERY PROCESS FOR HEAVY OIL SANDS

Roman A. Pachovsky, Calgary, Canada, assignor to Texaco Canada Inc., Calgary, Canada

Filed Oct. 28, 1982, Ser. No. 437,397
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 **10 Claims**



1. A method for the recovery of bitumen from a subterranean formation of heavy oil sands traversed by at least one injection well and at least one production well associated with each injection well, and having a fluid communication path therebetween comprising:

(1) introducing into said formation by way of each injection well air in admixture with a heating fluid selected from the group consisting of low quality steam, hot water, or mixtures thereof, and an alkalinity agent; raising said subterranean heavy oil sands to a temperature in the range of about 200° to 350° F. and reducing the viscosity of and oxidizing without burning a portion of the bitumen in said heavy oil sands to produce additional petroleum acids and neutralizing said petroleum acids to produce emulsifying agents in said underground formation; and combining said bitumen with water to produce a bitumen-water emulsion;

(2) recovering said bitumen-water emulsion from said underground formation by way of at least one production well; and

(3) demulsifying said bitumen-water emulsion and separating bitumen, water, and sand.

4,475,593

METHOD FOR PROFILE CONTROL AND CONFORMANCE CORRECTION

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Houston, Tex.

Filed Jan. 24, 1983, Ser. No. 460,196
Int. Cl.³ E21B *33/138*
U.S. Cl. 166—281 **20 Claims**

1. A method of selectively establishing a barrier to fluid flow at some desired distance from a borehole, the borehole passing through a subterranean formation containing strata which are water-rich and other strata which are oil-rich, said formation

also contain[illegible] acid extractable metal ions, the method comprising the steps of:

providing an aqueous acid solution capable of extracting metal ions from the formation structure;

injecting a volume of said acid solution through the borehole and into said formation, the volume of the acid solution sufficient to extract and remove metal ions from the formation for some desired distance remote from the borehole;

providing an acidified resin emulsion composition comprising a hydrocarbon resin, acidified water and acid stable surfactant, which resin emulsion is susceptible to demulsification upon contact with a sufficient concentration of polyvalent metal ions;

passing said resin into the borehole and through the formation behind the acid solution, whereupon the resin emulsion demulsifies at a region in the formation remote from the borehole, the region containing extractable polyvalent metal ions, said demulsification being effective to establish a barrier having greatly reduced permeability to fluid flow over a relatively long period of time.

4,475,594

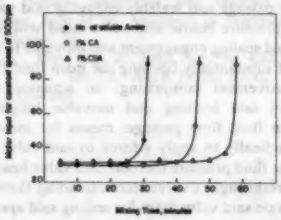
PLUGGING WELLBORES

Evelyn N. Drake, Plainfield, and Peter Calcavecchio, Lodi, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 28, 1982, Ser. No. 392,722

Int. Cl.[3] C08K *5/01, 5/34;* C08L *23/00;* E21B *33/138*

U.S. Cl. 166—294 **43 Claims**



1. A process for plugging a porous earth formation which comprises contacting said formation with a shear thickening composition which comprises a water-in-oil emulsion having particles of hydratable, water-expandable clay dispersed in the continuous oily phase thereof, said oily phase having both a surfactant and an oil soluble amine dissolved therein, said composition having a greater low shear thickening time than the same composition free of the oil soluble amine dissolved in the oily phase, and wherein said contacting occurs under conditions of high shear sufficient to form a paste from said composition which plugs said porous formation.

4,475,595

METHOD OF INHIBITING SILICA DISSOLUTION DURING INJECTION OF STEAM INTO A RESERVOIR

David R. Watkins, Irvine, and David J. Watansbe, Orange, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 23, 1982, Ser. No. 410,316

Int. Cl.[3] E21B *43/24*

U.S. Cl. 166—303 **23 Claims**

1. A method for inhibiting the dissolution of silica from a silica-containing material in the vicinity of a well penetrating a hydrocarbon-containing reservoir during the injection of steam into the reservoir via the well comprising adding to the boiler feedwater used to generate the steam or to the steam itself an ammonium or substituted ammonium compound selected from the group consisting of ammonium halides, ammonium salts of inorganic acids, ammonium salts of carboxylic acids, quaternary ammonium halides and amine or substituted amine hydrochlorides.

4,475,596

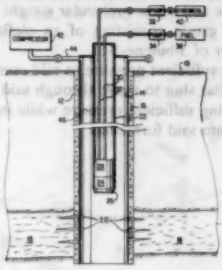
WELL STIMULATION SYSTEM

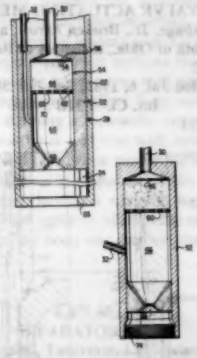
Wolfgang A. Papst, #2109, 727-6. Ave. SW., Calgary, Alberta, Canada

Filed Jan. 31, 1983, Ser. No. 462,436

Int. Cl.[3] E21B *43/24*

U.S. Cl. 166—303 **4 Claims**





1. In a process for increasing the yield of hydrocarbons from an underground hydrocarbon-bearing formation penetrated by a borehole and wherein a gas generator is located in the borehole at or above the level of said formation, said gas generator comprising:

a housing forming a chamber and having an upper inlet end for receiving fuel,

a catalyst assembly in an upper region of said chamber,

a gas-generating reaction chamber below said catalyst assembly, said reaction chamber having a separate chemical reactant inlet and

a restricted lower outlet for the passage of hot gaseous reaction products,

the method of operating said gas generator which comprises:

flowing from the surface a fuel consisting of hydrogen peroxide,

catalytically reacting the hydrogen peroxide to form hot reaction gases including oxygen, and steam and

contacting said hot reaction gases with ammonia which converts the oxygen into steam and nitrogen,

whereby hot gaseous reaction products substantially free of uncombined oxygen penetrate the hydrocarbon bearing formation.

4,475,597

LOW MOLECULAR WEIGHT OLEFIN POLYMERS AND COPOLYMERS OF 3-BUTENE-1-OL

Ellis K. Fields, River Forest, and William C. Clarke, Evanston, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 256,060, Apr. 21, 1981, Pat. No. 4,436,940. This application Sep. 15, 1983, Ser. No. 532,460
Int. Cl.³ E21B *43/22, 43/25*
U.S. Cl. 166—305 R 2 Claims

1. A method of injecting a micellar slug into a subterranean formation comprising the steps of:

(1) contacting said subterranean formation with an aqueous fluid composition water, a surfactant, a hydrocarbon, an electrolyte and a low molecular weight polymer selected from the group consisting of an olefin polymer and a copolymer of 3-butene-1-ol.

(2) applying sufficient pressure to said composition to cause said micellar slug to move through said formation.

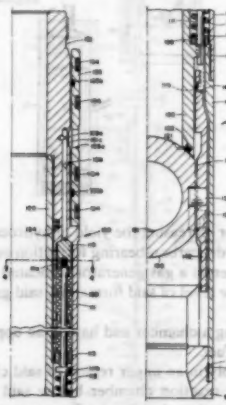
(3) maintaining sufficient pressure while injecting said composition into said formation.

4,475,598

BALL VALVE ACTUATING MECHANISM

William L. Brakhage, Jr., Broken Arrow, and Timothy R. Cupples, Tulsa, both of Okla., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Jul. 6, 1982, Ser. No. 395,514
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—321 18 Claims



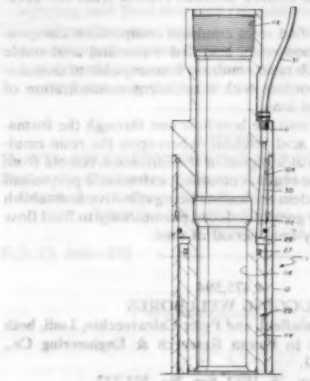
1. A valve for opening and closing a fluid conduit in a subterranean well comprising: a valve closure member movable between an open and a closed position; an axially shiftable flow tube; a first actuating element axially shiftable in response to control fluid pressure to engage the valve closure member and move said valve closure member from the closed to the open position; a separate second actuating element axially shiftable in response to control fluid pressure to axially move the flow tube into engagement with the valve closure member in the open position; the first actuating element being actuated at a pressure less than the actuating pressure of the second actuating element.

4,475,599

VALVE FOR SUBTERRANEAN WELLS

Neil H. Akkerman, Kingwood, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed May 1, 1981, Ser. No. 259,767
Int. Cl.³ E21B *43/12*
U.S. Cl. 166—323 20 Claims



1. In a valve positionable within a subterranean well and having a housing defining an annular valve seat surrounding a longitudinally extending main fluid flow passage, a shiftable valve head movable to a closed position extending across the main fluid flow passage and sealably engaging said valve seat, whereby fluid pressure below said valve head will hold said valve head in said sealing engagement and movable to a second position at least substantially opening the main fluid flow passage, the improvement comprising: an actuator shiftably mounted within said housing and movable longitudinally within the main fluid flow passage; means for moving said actuator longitudinally to apply a force to said valve head in opposition to the fluid pressure thereon; said valve head having an aperture therethrough; a valve stem extending through said aperture; means on said valve stem for sealing said aperture by movement of said valve stem; resilient means mounted in said head for urging said valve stem to seal said aperture; and an enlarged portion secured to said valve stem and disposed in the longitudinal path of said actuator, whereby the initial longitudinal movement of said actuator shifts said valve stem in one direction to open said aperture to equalize fluid pressure above and below said valve head, followed by longitudinal movement of the actuator and valve head to open the main fluid flow passage when said aperture is open.

4,475,600

SUBSEA WELL COMPLETION APPARATUS

Eugene J. Cegielski, and Robert L. Wilkins, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 5, 1982, Ser. No. 365,272
Int. Cl.³ E21B *43/013*
U.S. Cl. 166—344 6 Claims

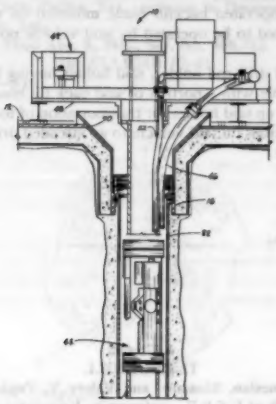
1. A subsea well completion apparatus for a subsea well having a subsea well bore comprising

an anchor base adapted to be landed on bottom surrounding the subsea well bore,

a conductor pipe adapted to be cemented in the well bore,

a production string extending through said conductor pipe and gradually bending on a radius to accept through flowline tools from a vertical position in said conductor

pipe below said anchor base to a substantially horizontal position a short distance above the anchor base, and



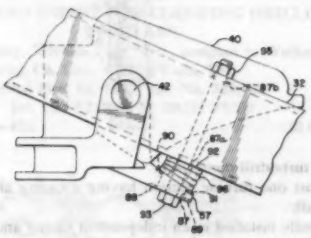
a low profile tree system for connecting to the production string and adapted to be located on and supported by said anchor base.

4,475,601

VARIABLE WIDTH PLOW SYSTEM WITH SHIM MEANS ADJUSTMENT

Eldon A. Harden, Naperville, and Michael A. McSweeney, LaGrange, both of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Sep. 20, 1982, Ser. No. 420,166
Int. Cl.³ A01B *15/00, 65/02*
U.S. Cl. 172—283 **8 Claims**



1. A plow system adapted to be connected to and pulled by a tractor comprising:

a hitch member adapted for attachment to the tractor and providing a vertical pivot axis;

a main beam assembly connected to said hitch for pivoting movement about said vertical pivot axis, said main beam assembly including a main beam inclined relative to the direction of travel of said plow system;

a tail section supported from the rear end of said main beam and including a tail wheel supporting said beam;

steering means connected between the hitch and said tail wheel and adapted to be responsive to turning of the tractor for turning said tail wheel in a direction opposite to the direction of turning of the tractor;

a plurality of plow bottoms; and

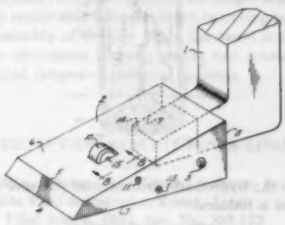
means for mounting each of said plurlity of plow bottoms in equally spaced positions along said beam, each of said mounting means comprising a bracket having a vertical bore rotatably engaged with a vertical pivot pin mounted on said main beam, said bracket further including a laterally extending ear disposed adjacent said main beam, and shim means disposed between said main beam and said ear for setting and maintaining the horizontal inclination of said bracket relative to said beam in one of a plurality of rotated positions of adjustment corresponding to the desired lateral spacing between furrows formed by said plow bottoms.

4,475,602

ROLLER EQUIPPED EARTHWORKING MEMBER

Norman G. Gerstner, P.O. Box 2406, Soldatna, Ak. 99669

Filed Dec. 23, 1982, Ser. No. 436,574
Int. Cl.³ E02F *9/28*
U.S. Cl. 172—713 **6 Claims**



1. An earthworking member for attachment to a prime mover, said earthworking member including,

a body having a horizontal leading edge for earthen material penetration, upper and lower surfaces rearwardly diverging from said leading edge, a rear wall, said body defining an open area rearwardly offset from said leading edge, said body also defining a forwardly extending recess terminating rearwardly at said rear wall, said recess adapted to receive the end of a prime mover mounted shank, and

roller means horizontally disposed within said open area including a roller having a chordal segment extending beyond one of said surfaces to dislodge material to facilitate insertion of the body into earthen material.

4,475,603

SEPARATOR SUB

Asadollah Hayatdavoudi, Lafayette, La., assignor to Petroleum Instrumentation & Technological Services, Lafayette, La.

Filed Sep. 27, 1982, Ser. No. 423,527
Int. Cl.³ E21B *21/00*
U.S. Cl. 175—65 **14 Claims**

7. An apparatus for use in the drilling of a well with a drill bit supported by an elongated drill string having a bore through which a stream of drilling mud circulates to remove the cuttings of the drill bit, comprising:

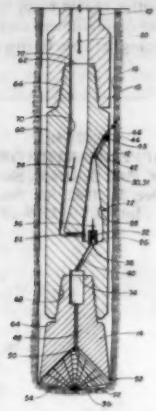
a. a tool sub body having a bore defining a flow path and including upper and lower connections for fixing the tool sub body in a drill string above the drill bit so that drilling mud circulating through the drill string can circulate through the tool body;

b. the tool sub body including cyclone separator means for receiving drilling mud from the flow path for separating the stream of drilling mud into a less dense first portion and a more dense second portion;

c. first conduit means in the tool sub body communicating the cyclone separator means with the flow path for directing the less dense first portion of the stream of drilling mud to the drill bit; and

d. second conduit means in the tool sub body communicating the cyclone separator means with the well annulus

above the drill bit for directing the more dense second portion of the stream of drilling mud into the well annulus



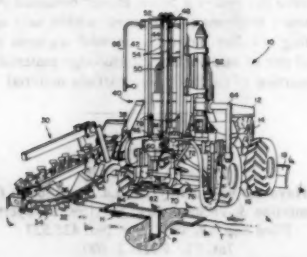
so that the hydrostatic drilling mud pressure adjacent the drill bit is reduced.

4,475,604

MOBILE MACHINE FOR SUBTERRANEAN INSTALLATION OF PIPING AND THE LIKE

Philip E. Albertson, and Arthur D. Deken, both of Perry, Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.

Filed Aug. 9, 1982, Ser. No. 406,552
Int. Cl.³ E21B *19/14, 3/02*
U.S. Cl. 175—85 **4 Claims**



1. A ground supported mobile machine adapted for subterranean installation of piping and the like comprising:

a tractor vehicle having a power source to propel the vehicle;

a drilling attachment mounted on said vehicle having a vertical mast providing guide rails, a carriage supporting a rotary drill head reciprocably mounted on said guide rails and a linear hydraulic actuator coupled between said mast and said carriage to drive said carriage along said rails, said rotary drill head providing a rotatable drive shaft to be coupled to a drill rod and bit in performing a rotary drilling operation;

a drill table fixedly supported adjacent the lower end of said mast providing an opening to accommodate drill rod and bit manipulations in performing a drill operation;

hydraulically actuated slip means associated with said table opening to grippingly engage with a drill rod to preclude downward rod movement while permitting upward movement of the rod relative to such slip means; and

pipe wrench tong means operable to break free a threaded joint between drill rod sections or between a rod section and the drill bit;

a power operated backfill blade mounted on said vehicle connected to be operated by said vehicle power source; and

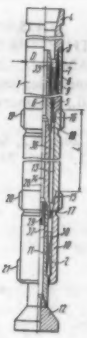
a tool and drill rod holder, said holder having hook means engagable with a portion of said back fill blade to enable picking up said holder for transportation of tools and drill rod sections on said vehicle to an intended drilling operation site.

4,475,605

TURBODRILL

Jury R. Ioanesian, Moscow, and Valery V. Popko, Moskovskaya, both of U.S.S.R., assignors to Vsesojuzny Nauchnois-sledovatelsky Institut Burovoi Tekhniki, U.S.S.R.

Filed Sep. 10, 1981, Ser. No. 301,024
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **6 Claims**



1. A turbodrill comprising:

at least one turbine section having a casing and a hollow shaft;

a spindle installed in an independent casing and carrying a rock breaking tool;

a pipe assembly accommodating instruments for measuring the three-dimensional position of a well bore in space, the pipe assembly being formed by two coaxially arranged pipes provided between said spindle and said turbine section adjacent thereto;

one end of the outer pipe being rigidly coupled to the casing of said spindle, the other end of the outer pipe being rigidly coupled to the casing of the turbine section;

one end of the inner pipe being coupled to said spindle, the other end of the inner pipe being coupled to the hollow shaft of said turbine section so as to transmit rotary motion from said shaft to said spindle;

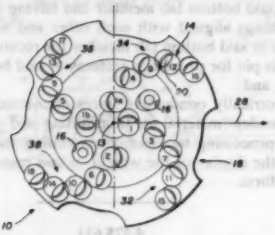
wherein the pipes are made of material with a coefficient of magnetic permeability not greater than about 1.12; and

said turbodrill is adapted to ensure accurate alignment of said outer pipe with the well bore and adapted to ensure accurate readings of said measuring instruments accommodated in said pipe assembly, thus ensuring accurate three-dimensional position measuring of said rock breaking tool.

4,475,606
DRAG BIT

Morgan L. Crow, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 9, 1982, Ser. No. 406,722
Int. Cl.³ E21B 10/46
U.S. Cl. 175—410 10 Claims



4. A drill bit, comprising:

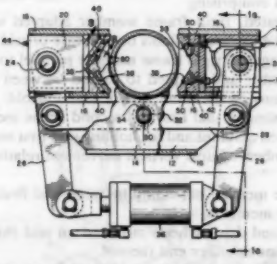
a body having a central axis;

a plurality of cutters attached to said body, each of said cutters having a circular cutting face for contacting a material to be drilled and during rotation of said bit about said central axis, defining a circle perpendicular to the central axis formed with a radius centered on the central axis extending to the center of the cutting face of the cutter and with at least three radially consecutive cutters located at different axial dimensions from a common plane perpendicular to said central axis, the cutters disposed throughout a first continuous portion of the body being positioned so that the annular area between the circles of radially adjacent cutters therein is a substantially constant value.

4,475,607
CLAMP AND INSERT FOR CLAMPING DRILLING TUBULARS

Keith M. Haney, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co. Inc., Wichita Falls, Tex.

Filed Dec. 11, 1981, Ser. No. 329,702
Int. Cl.³ E21B 7/22; B65H 59/10
U.S. Cl. 175—422 18 Claims



1. In a clamp for clamping a drilling tubular against rotation, said clamp comprising a jaw having a face adapted to fit adjacent a drilling tubular being clamped, and means for positioning the jaw to clamp the drilling tubular, the improvement comprising:

means for defining at least one insert receiving recess adjacent the face, said insert receiving recess bounded by a surface which defines a portion of a first cylinder;

an insert positioned within the insert receiving recess, said insert defining a toothed surface, which extends beyond the face of the jaw to contact and frictionally engage the drilling tubular, and a positioning surface, which defines a portion of a second cylinder aligned with an insert axis and sized smaller than the first cylinder, such that the insert is rotatable in the insert receiving recess;

means, included in the toothed surface, for defining an array of teeth to oppose rotation of the drilling tubular with respect to the jaw; and

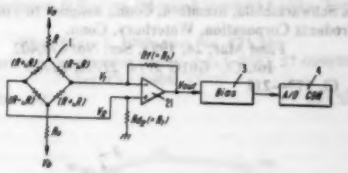
means for limiting movement of the insert in the insert receiving recess such that the insert is free to rotate within the insert receiving recess through a selected range to allow the toothed surface to orient into contact with the drilling tubular to accommodate a range of sizes of the drilling tubular, yet the insert is impeded from rotating beyond the selected range;

said insert receiving recess and insert shaped such that the insert is positively captured in the insert receiving recess when the insert is within the selected range, and the insert is readily removable from the insert receiving recess without disassembly of the jaw when the insert is disengaged from the movement limiting means and rotated beyond the selected range to a removal position.

4,475,608
WEIGHT DETECTION CIRCUIT FOR A LOAD CELL SCALE

Kazufumi Naito, Yanagasaki, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jun. 4, 1982, Ser. No. 385,123
Claims priority, application Japan, Jun. 16, 1981, 56-93129
Int. Cl.³ G01G 3/14; G01L 5/12, 1/22
U.S. Cl. 177—211 6 Claims



1. A weight detection circuit for a load cell scale, comprising a bridge circuit for a strain gauge resistance of the load cell, an operational amplifier connected substantially directly to an output of said bridge circuit, a feedback resistance connecting a negative input line and an output line of said operational amplifier, and a voltage-dividing resistance being connected between a positive input line of said operational amplifier and ground, said voltage dividing resistance being substantially equal to said feedback resistance.

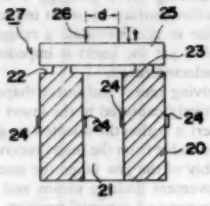
4,475,609
DEVICE FOR GAUGING LARGE LOAD EXERTED ON STEEL STRUCTURE OR THE LIKE

Toshio Sakai, Toyonaka; Takehiro Matsui, Osaka; Akira Tanioka, Matsubara; Kohki Koyanagi, Asuka; Takaaki Ohkubo, Ibaraki; Tohru Hori, Nara; Yoshihiko Matsui, Osaka; Itsuo Kawagishi, Sakai; Masahiro Fujii, Kawachi-Nagano; Kohichi Yabe, Inagi, and Haruhisa Yamashita, Hinode, all of Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Japan

Filed Jun. 7, 1982, Ser. No. 385,449
Claims priority, application Japan, Aug. 17, 1981, 56-127691; Mar. 9, 1982, 57-35812
Int. Cl.³ G01G 3/14; G01L 5/12
U.S. Cl. 177—211 10 Claims

1. A gauging device adapted for gauging large load exerted on a relatively flexible part comprising a cylindrical load converter having strain gauges attached thereto at suitable locations on the inner and outer peripheries thereof and adapted to

convert loads exerted on the load converter at both ends thereof into quantities of electricity, at least one load concentrating ring provided on the load converter at least at one end thereof and having an outer diameter smaller than the outer diameter of the load converter and an inner diameter larger than the inner diameter of the load converter, a discal load dispersing plate disposed on the load concentrating ring on the side thereof remote from the load converter and having a



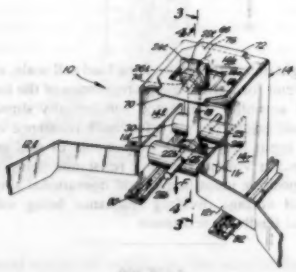
diameter larger than the outer diameter of the load concentrating ring, and a column-shaped load concentrating seat arranged on the load dispersing plate on the side thereof remote from the load converter and having a diameter smaller than the diameter of the load dispersing plate, said load concentrating ring, load dispersing plate and load concentrating seat all being disposed in the path of transmission of load to the load converter.

4,475,610

LEVERED SCALE WITH STRAIN GAUGE TENSION LINK

Jack Schwarzschild, Stamford, Conn., assignor to Timex Mecial Products Corporation, Waterbury, Conn.

Filed Mar. 24, 1983, Ser. No. 478,402
Int. Cl.³ G01G 3/14, 21/12, 21/23
U.S. Cl. 177—211 **11 Claims**



1. In a scale having a mounting means for supporting one end of a load link and lever arms for supporting a weighing platform wherein the lever arms are mechanically linked together to provide a tensile resultant force acting on the opposite end of the load link due to the weight of the mass applied to the platform, the improvement which comprises:

(a) a first cross pin pivotally supported in said mounting means,

(b) a second cross pin parallel to said first cross pin pivotally coupled to said lever arms,

(c) a sheet metal tension link plate of uniform thickness including a top tab member, a central member and a bottom tab member, said top tab member having a first hole for receiving said first cross pin, said bottom tab member having a second hole for receiving said second cross pin, and said central member having stress-dependent material bonded thereto, said material adapted to provide electrical signals in response to changes in electrical resistance of said stress-dependent material proportional to the magnitude of said resultant tensile force acting on said tension link plate,

(d) Top support means having a first notch for receiving said top tab member and having first and second openings aligned with each other and with said first hole in said top tab member for receiving said first cross pin for providing stiffness to said top tab member,

(e) bottom support means having a second notch for receiving said bottom tab member and having third and fourth openings aligned with each other and with said second hole in said bottom tab member for receiving said second cross pin for providing stiffness to said bottom tab member, and

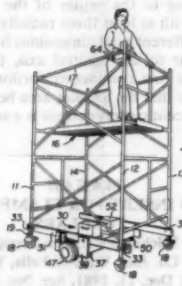
(f) electrically conductive wires connected to said stress-dependent material for transmitting said electrical signals for processing by electronic circuitry means to provide for the display of the weight of said mass applied to said platform.

4,475,611

SCAFFOLD PROPULSION UNIT

Robert E. Fisher, Berkeley, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Sep. 30, 1982, Ser. No. 431,128
Int. Cl.³ B62D 11/06; E04G 1/26
U.S. Cl. 180—6.5 **7 Claims**



1. A scaffold propulsion unit for use with a movable scaffold having castered columns at the four scaffold corners, said propulsion unit comprising:

a first elongated, rigid frame member adapted to extend between the castered colums on one side of said scaffold,

a second elongated, rigid frame member parallel to said first frame member and adapted to extend between the castered columns on the other side of said scaffold.

means for fastening said first and second frame members to said castered columns and for holding said first and second frame members against vertical movement relative to said scaffold,

a third frame member extending between said first and second frame members,

first and second drive wheels mounted on said third frame member, one at either end thereof,

mounting means for mounting said third frame member on said first and second frame members with the axes of rotation of said drive wheels being crosswise to the lengths of said first and second frame members and for limited free vertical movement of said drive wheels relative to said first and second frame members,

a power source,

first and second drive motors mounted on said third frame member,

means for driving said first and second wheels in repsonse to respective energization of said first and second motors, and

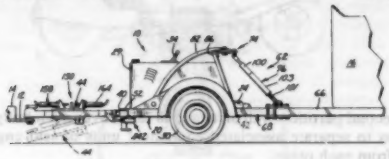
control means for connecting and disconnecting said motors to and from said power source.

4,475,612

TONGUE ASSEMBLY FOR POWERED TRAILER

Rogers H. Anderson, 10501 Bloomington Freeway, Bloomington, Minn. 55420

Filed Sep. 30, 1982, Ser. No. 429,969
Int. Cl.³ B62D *59/04*
U.S. Cl. 180—14.2 **11 Claims**



1. A load bearing powered trailer for assisting a powered vehicle in moving a load trailer, the powered trailer comprising:

a main frame having a forward end and a rearward end;

a single pair of wheels movably supporting the main frame;

an engine mounted on the main frame;

automatic transmission means for transmitting mechanical power from the engine to the wheels;

hitch means for selectively connecting the powered trailer adjacent the rearward end of its main frame to the load trailer; and

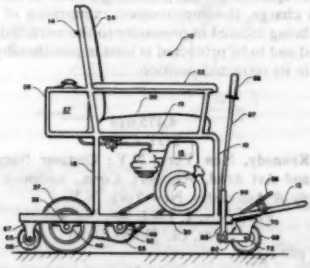
a tongue assembly for selecively connecting the powered trailer adjacent the forward end of its main frame to the vehicle, the tongue assembly being pivotally mounted on the main frame in such a manner that none of the weight of the load trailer is transferred to the vehicle from the powered trailer and only a portion of the weight of the tongue assembly of the powered trailer is transferred to the vehicle from the powered trailer.

4,475,613

POWER OPERATED CHAIR

Thomas E. Walker, 333 S. Euclid Ave., San Diego, Calif. 92114

Filed Sep. 30, 1982, Ser. No. 429,107
Int. Cl.³ B62D *61/00*
U.S. Cl. 180—22 **11 Claims**



1. A power operated chair comprising:

a base frame assembly;

a chair assembly mounted on said base frame assembly;

an internal combustion engine mounted on said power operated chair;

a fuel tank mounted on said power operated chair;

at least one rear drive wheel, said rear wheel rotatably mounted on a transversely extending rear axle that is supported from said base frame assembly;

a pair of laterally spaced steerable front wheels and means mounting said front wheels to the forward end of said base frame assembly, the axis of rotation of said laterally spaced front wheels is located longitudinally forwardly of said chair assembly;

a pair of laterally spaced rear wheels and means mounting them to the rearward end of said base frame assembly, said drive wheel being mounted inwardly of both of said laterally spaced rear wheels, said laterally spaced rear wheels being supported independently of each other and the axis around which these wheels rotate is rearwardly spaced from the axis about which said drive wheel rotates;

a foot platform extending forwardly a predetermined distance from the front end of said base frame assembly, said foot platform also extending forwardly of said pair of laterally spaced steerable front wheels to form a protective barrier for said front wheels and also the feet of the person riding said power operated chair;

a disc brake assembly mounted on said rear axle;

a foot brake assembly comprising a foot brake pedal pivotally mounted on said foot platform, and connecting rod means whose forward end is connected to said foot pedal and whose rearward end is connected to said disc brake assembly; and

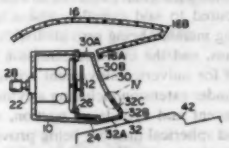
drive means connecting said internal combustion engine to said rear drive wheel.

4,475,614

COMBINATION METER COVER CONSTRUCTION

Masahiro Takamatsu, and Masaaki Yamada, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 2, 1983, Ser. No. 471,345
Claims priority, application Japan, Jul. 1, 1982, 57-099895[U]
Int. Cl.³ B60K *37/00*
U.S. Cl. 180—90 **19 Claims**



1. A combination meter cover construction for covering a combination meter secured to an instrument panel for use in a vehicle, comprising:

a meter case incorporating therein a main body a meter;

a transparent cover provided at the forward portion of said meter case, for making an indicating portion of said main body of said meter visually inspectable from outside, said transparent cover being formed with an inclined portion extending into a compartment and forming a moderate curve obliquely downwardly;

a meter hood disposed close to a front face of the upper portion of the transparent cover, for covering a front face of an upper portion of said meter case; and

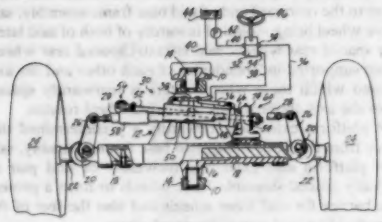
a meter cluster interposed between a lower portion of said transparent cover and said meter case for supporting the lower portion of said transparent cover on said meter case, said meter cluster being provided with a vertical rectilinear portion contiguous to an inclined portion thereof connected to said inclined portion of the transparent cover such that said meter cluster is coplanar with said transparent cover so that an indicating portion of the meter can be readily inspected.

4,475,615

POWER STEERING SYSTEM

Gary C. Stanek, Taylor, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 16, 1982, Ser. No. 408,394
Int. Cl.[3] B62D *5/10*
U.S. Cl. 180—160 2 Claims



1. A power steering system for a vehicle of the type having a pair of steerable wheels mounted on opposite ends of an axle, steering linkage including tie rod interconnecting the steerable wheels, a double-acting hydraulic steering cylinder assembly, a hydrostatic steering unit, first and second fluid lines interconnecting opposite sides of the steering cylinder assembly with the hydrostatic steering unit, and a steering wheel interconnected with the hydrostatic steering unit, said hydrostatic steering unit displacing a first quantity of fluid to said fluid line when the steering unit is turned one revolution in a first direction, and said hydrostatic steering unit displacing an equal quantity of fluid to the second fluid line when the steering wheel is turned one revolution in a second direction; characterized by said double-acting steering cylinder assembly having a cylinder, a pair of rods extending in opposite directions outwardly of the cylinder, one of said rods being connected to tie rod, and mounting means capable of securing the cylinder to the axle for universal movement, the mounting means including a mounting member secured to said axle, a cylinder extension secured to said cylinder, and a spherical member, said mounting member being provided with spherical recess forming means, and the cylinder extension carrying the spherical member for universal movement within the spherical recess, said cylinder extension including a cylindrical portion, a shoulder adjacent said cylindrical portion, and threaded end portion, said spherical member being provided with a cylindrical aperture of substantially the same size as said cylindrical portion and being mounted thereon, and the mounting means being further characterized by the provision of holding means capable of holding the spherical member against said shoulder.

4,475,616

ENGINE COVER DEVICE FOR LIGHT VEHICLES

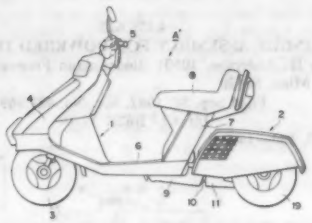
Sho Yamazaki, Tokyo; Kazutoshi Matsumoto, Saitama, and Hideo Ochiai, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1982, Ser. No. 411,534
Claims priority, application Japan, Aug. 26, 1981, 56-134679; Aug. 27, 1981, 56-134499; Sep. 9, 1981, 56-141913; Sep. 10, 1981, 56-134518[U]
Int. Cl.[3] B60K *11/08*; B62J *15/00*; B62K *5/04*
U.S. Cl. 180—215 12 Claims

1. In a light vehicle having at least one front wheel, at least one rear wheel, and a power unit for driving said rear wheel and having an integrated assembly of an engine and transmission case, a cover device comprising:

a cover main body for covering said rear wheel and said power unit from outside thereof;

a first partition wall arranged in said cover main body so as to separate said rear wheel from said power unit; and



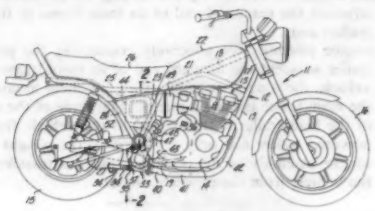
a second partition wall arranged in said cover main body so as to separate associated equipment units of said engine from each other.

4,475,617

ENGINE INTAKE SYSTEM FOR MOTORCYCLES

Shunji Minami, Fururoi, and Hiroshi Kimura, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Sep. 15, 1981, Ser. No. 302,658
Claims priority, application Japan, Sep. 16, 1980, 55-128145
Int. Cl.[3] F02D *23/00*; B60K *13/00*; B62K *11/04*
U.S. Cl. 180—219 7 Claims



1. In a motorcycle having wheels, a supporting frame assembly, an internal combustion engine for powering said motorcycle, drive means for transferring the drive from said engine to one of said wheels, a stand pivotally supported by said frame assembly and adapted to support the motorcycle when in an upright position, and an induction system for said engine including a supercharger for providing a boost in the pressure of the inlet charge, the improvement comprising of said supercharger being located in proximity to the retracted position of said stand and to be protected at least in part thereby when said stand is in its retracted position.

4,475,618

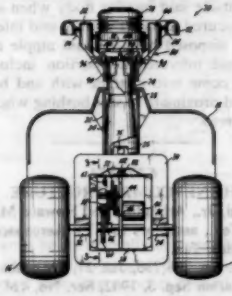
TOY CAR

Melvin Kennedy, New York, N.Y.; Dietmar Nagel, Chester, N.J., and Avi Arad, Westport, Conn., assignors to Nagel/-Kennedy & Associates, New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,397
Int. Cl.[3] B62D *61/08*
U.S. Cl. 180—237 5 Claims

1. A toy car comprising a body, a pair of front wheels and a pair of rear wheels, each pair of wheels coupled together by a supporting axle which is rotatably mounted relative to said body, a housing mounted intermediate said pair of front wheels, a motor and transmission mechanism mounted in said housing, said transmission mechanism including a driving gear coupled to said motor, a plurality of driven gears, at least one of which is coupled to the axle connecting said pair of front wheels and a plurality of intermediate gears movable into and

out of driving engagement between said driven gears and said driving gear upon the activation and deactivation, respectively, of said motor, a steering assembly coupled to said front wheels for steering the car in a desired direction, and activating means selectively operable to activate and deactivate said motor which upon activation automatically causes said intermediate gear to engage the driven and driving gears to cause power to be applied to the front pair of wheels thereby causing the car to move and which upon deactivation automatically disengages at least one of the intermediate gears from driving



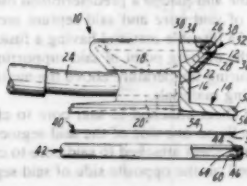
engagement between the driving and driven gears freeing the front driving wheels of the toy for rotation to prevent damage to the car, said activating means including a leaf spring mounted on the housing, a shaft having one end positioned proximate to said leaf spring and means positioned proximate the other end of said shaft which upon application of a force thereto causes the shaft to force the leaf spring into electrical contact with said housing thereby causing power to be applied to said motor and upon removal of the force permitting said leaf spring to be brought out of electrical contact with the housing thereby removing power from said motor.

4,475,619

STETHOSCOPE WITH FLOATING DIAPHRAGM

Thomas J. Packard, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 24, 1983, Ser. No. 478,222
Int. Cl.³ A61B 7/02; H04R 25/00
U.S. Cl. 181—137 **11 Claims**



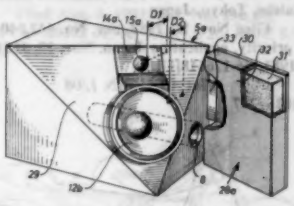
1. A stethoscope head comprising:
a. a body having a bore therein;
b. a diaphragm head connected to the body and having an aperture therein communicating with the bore in the body to conduct sound from the diaphragm head into the bore;
c. a continuous and peripheral rim connected to the head;
d. a diaphragm comprising: (1) a first surface adapted to selectively engage the rim to prevent the passage of sound energy there between, (2) a second surface spaced from the first surface and (3) at least a single edge connecting the first surface to the second surface; and
e. means for loosely affixing the diaphragm to the head whereby the first surface of the diaphragm and the rim are held in close proximity.

4,475,620

LOUDSPEAKER WITH WALL REFLEX ABSORBER

Stig Carlsson, Torkel Knutssonsgatan 15, S-117 25 Stockholm, Sweden

Filed Nov. 23, 1982, Ser. No. 443,942
Claims priority, application Sweden, Nov. 26, 1981, 8107050
Int. Cl.³ H05K 5/00
U.S. Cl. 181—146 **11 Claims**



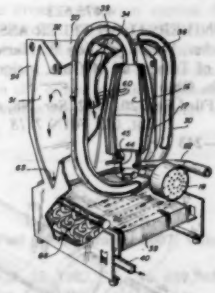
1. A loudspeaker comprising a casing having a rear wall which wall defines a rear plane, and an electro acoustical loudspeaker unit adapted to be a sound source, said loudspeaker unit being mounted on the casing and having a sound radiating surface located at a short distance from said rear plane and facing forwards at an acute angle to the rear wall, said loudspeaker unit having an acoustical axis of radiation normal to the said radiating surface thereof, characterized by sound absorbing means disposed in front of and adjacent to the said rear plane at the side of the said casing, said absorber being disposed near said sound radiating surface and being adapted to attenuate that part of the sound radiated towards the said rear plane which has wave-lengths shorter than eight times the shortest distance of the said sound radiating surface from the said rear plane.

4,475,621

SOUND REDUCTION MEANS FOR PULSATING TYPE FURNACE

Floyd E. Cherington; Charles W. Adams, both of Carrollton, and Elrede F. Schneider, Lewisville, all of Tex., assignors to Lennox Industries, Inc., Carrollton, Tex.

Filed Sep. 10, 1982, Ser. No. 416,662
Int. Cl.³ F24H 3/02; F01H 5/00
U.S. Cl. 181—212 **9 Claims**



1. In a pulsating type furnace having a combustion chamber with a fuel charge inlet and an exhaust gas outlet, means for admitting successive charges of fuel to the combustion chamber and means for igniting the successive fuel charges, whereby high pressure waves may emanate from the combustion chamber and cause vibration and undesirable sound, the improvement comprising sound reduction means including an exhaust decoupler body adapted to receive a pulsating exhaust gas stream from the combustion chamber, said exhaust decou-

pler body having an opening with a silencer tube fixed therein, said exhaust decoupler body having opposed curved walls that are formed from sheet metal.

4,475,622

EXHAUST SYSTEM FOR MOTOR VEHICLES

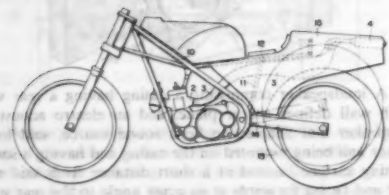
Kazuhiko Tsunoda; Yasuyuki Tsurumi, and Masamichi Konsori, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,040

Claims priority, application Japan, Nov. 25, 1981, 56-187719; Nov. 30, 1981, 56-176618[U]

Int. Cl.³ F01N *1/08*

U.S. Cl. 181—227 **13 Claims**



1. An exhaust system for a motor vehicle having at least one rear wheel and a rear cowling member extending over said rear wheel so as to substantially cover same, comprising:

at least one exhaust pipe and at least one silencer connected to the rear end of said exhaust pipe, said silencer being at least partially disposed within the interior of said rear cowling member;

said silencer being disposed substantially above said rear wheel;

said motor vehicle being provided with an engine unit disposed in a substantially intermediate position in the longitudinal direction of said vehicle; and

said exhaust pipe comprising front and rear pipe portions of a relatively small section connected to said engine unit and said silencer, respectively, and an expansion chamber portion of a relatively large section through which said front and rear pipe portions are interconnected.

4,475,623

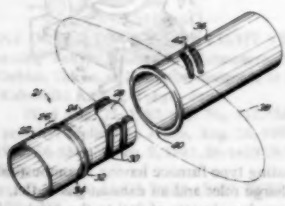
UNIVERSAL MUFFLER ASSEMBLY

James E. Gerber, Walbridge; Jon W. Harwood, and Clinton R. Hay, both of Toledo, all of Ohio, assignors to APX Group, Inc., Toledo, Ohio

Filed Sep. 20, 1982, Ser. No. 422,453

Int. Cl.³ F01N *7/18*

U.S. Cl. 181—243 **7 Claims**



1. A muffler assembly comprising:

a muffler body having muffler heads at the ends thereof;

at least one bushing disposed within the muffler body and connected to one of the muffler heads, said bushing being provided with at least two segmented bushing threads; and

a nipple having a nipple portion, an intermediate portion and a connector portion, said nipple portion being adapted to be inserted into and secured to said bushing, said connector portion having (i) at least one recess provided to allow part of the connector portion to be inserted past the bushing threads, and (ii) at least two segmented nipple threads adapted to engage said bushing threads when said nipple is rotated within said bushing to thereby secure the nipple within the bushing, said nipple portion adapted to be disposed outside said muffler body when said connector portion is secured to said bushing, said intermediate portions being disposed between said nipple and connector portions, said intermediate portion including a shank adapted to come into contact with and bear upon said muffler head proximate to said bushing when the nipple is secured thereto.

4,475,624

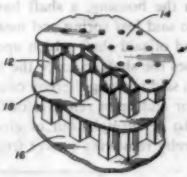
HONEYCOMB STRUCTURE

Gordon Bourland, Jr., Arlington, and Howard M. Price, Burleson, both of Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.

Division of Ser. No. 286,730, Jul. 27, 1981, abandoned. This application Sep. 3, 1982, Ser. No. 414,746

Int. Cl.³ E04B *1/82*; F01N *1/02*

U.S. Cl. 181—292 **4 Claims**



1. A honeycomb structure formed by inserting a honeycomb core through a septum material and one or more layers of meltable support material, employed to precisely position the septum material relative to said honeycomb core comprising:

a honeycomb core having a plurality of cells therethrough,

a plurality of septum sections positioned within each cell of said honeycomb core, said sections lying substantially in a common plane and placed a predetermined distance from one surface of said core and said septum sections being comprised of a fuseable material having a fusion temperature below the melting point of said supporting materials and a resin curing temperature above the melting point of said supporting materials,

a first bonding sheet attached to said core to close off the segmented cells on one side of the said segments, and

a second bonding sheet attached to said core to close off the segmented cell on the opposite side of said segments.

4,475,625

DETACHABLE NON-CONDUCTIVE PLATFORMS FOR AERIAL BOOM TRUCKS

Shannon K. Clements, 6216 Locust Dr., Evansville, Ind. 47712

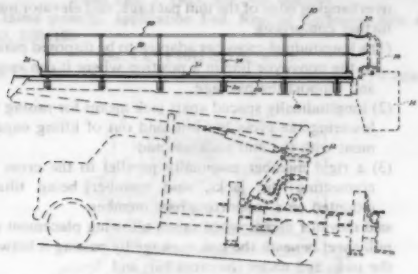
Filed Mar. 1, 1982, Ser. No. 353,090

Int. Cl.³ E04G *5/08*

U.S. Cl. 182—113 **2 Claims**

1. In combination, a platform and an aerial boom having a substantially flat platform-supporting surface, said platform including a walkway resting upon the flat surface of said boom, spaced arms each pivotally connected at one end to a marginal portion of said walkway, a rail pivotally connected to each arm on one side of said walkway, and a plurality of longitudinally

spaced pairs of transversely spaced gussets projecting downwardly from said walkway, said gussets being positioned at opposite sides of said boom when said platform is supported on said boom, means shiftable on an arm releasably anchoring said arm in substantially perpendicular relation to and above said walkway, said walkway including a marginal upturned flange,



each of said arms being pivotally connected adjacent one end thereof to an upturned flange spaced above said walkway, said anchoring means including a socket formed in said walkway, said anchor and one end of said arm being adapted to project into said socket with a snug fit to anchor the arm in substantial perpendicular relation to and above said walkway.

4,475,626

SCAFFOLD BRACKET

Jerome E. Gleich, 3094 Coney Island Ave., Brooklyn, N.Y. 11235

Filed Aug. 20, 1982, Ser. No. 410,135
Int. Cl.³ E04G *3/06*
U.S. Cl. 182—150 **2 Claims**

1. A sky hook for supporting one end of a scaffold plank outside of a building window opening, comprising in combination a strong, rigid member formed with a hook at one end for hooking over a window ledge and a loop at its opposite end for said plank to fit therein, and a steadying cross brace across said member fitted with a bolt adjacent each end thereof for abutting against a building wall to securely space the rigid member from the wall, one of said bolts being located along said cross brace at a greater distance from said rigid member than the other bolt, such that a rotational threading of said one bolt causes less movement of said rigid member than rotational threading of said other bolt, whereby said one bolt provides for fine adjustment and said other bolt provide for course adjustment.

4,475,627

PORTABLE TREE STAND/CAMP STOOL

William K. Eastridge, Weaverville, N.C., assignor to Bucksy Incorporated, Marshall, N.C.

Filed Aug. 5, 1981, Ser. No. 290,146
Int. Cl.³ A01M *31/02*; A45F *3/26*; A47C *9/10*
U.S. Cl. 182—187 **6 Claims**

1. A portable seating device useful as a self supporting campstool or tree supported stand, comprising a substantially flat platform; a tubular support frame, comprising two leg sections and a cross connection section, pivotally mounted at the lower end of the platform; a rigid reinforcing strut, pivotally mounted outwardly at one end to a determined point of each support frame leg section; means for detachably mounting the other end of each reinforcing strut to the upper end of the platform; a seat frame having a seat, comprising two leg sections and a cross connection section, said seat frame being pivotably mounted inwardly of and to said determined point of each support frame leg section whereby said seat frame can be rotated to a downward and out of the way position so moisture will not collect on the seat, said support frame, seat frame and reinforcing struts being foldable to said platform to define a closed position and defining an open position when said reinforcing struts are mounted at the upper end of the platform; a wedge means attached to the support frame cross connection section; and a flexible, elongated support means attached to said support frame cross connection section for wrapping around a tree to secure the support frame cross connection section to said tree, said flexible support means being attached below said wedge means, whereby, when the seating device is secured to a tree in the closed position, opening the seating device forces the wedge means into the outer surface of the tree.

4,475,628

LANDING NET

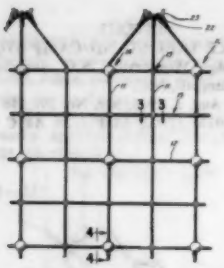
Jens A. Heilskov, Post Office Drawer 5007, Wilmington, N.C. 28403

Filed Apr. 28, 1983, Ser. No. 489,565
Int. Cl.³ E06C *1/56*, *9/14*
U.S. Cl. 182—198 **20 Claims**

1. In an embarkation-debarkation net having a plurality of longitudinal and transverse lines crossing at spaced positions to define a preselected open net grid configuration, and a plurality of securing elements securing the crossed lines at less than all of the crossings to retain the lines in said preselected grid configuration, the improvement comprising:

a plurality of spacer blocks disposed at line crossings to space the net outwardly from a rear portion thereof, said spacer blocks defining crossing through bores, one of said

bores receiving a longitudinal line and the other of said bores receiving a transverse line at the line crossing; and



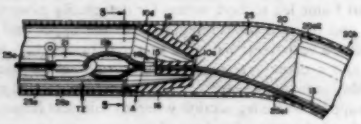
line-retaining means for retaining the spacer blocks against displacement from the line crossing position in said bores.

4,475,629

METHOD AND APPARATUS FOR SELECTIVELY METERING AND SPREADING LUBRICANT IN A CONDUIT

Nelson Jonnes, Stillwater, Minn., assignor to American Polywater Corporation, Stillwater, Minn.

Filed Nov. 30, 1982, Ser. No. 445,469
Int. Cl.³ F16N *1/00, 9/00*
U.S. Cl. 184—15.1 **36 Claims**



1. A method of lubricating the inner surface of a conduit having at least one bend, preparatory to pulling a length of cable through said conduit, comprising the steps of:

(a) uniformly applying metered amounts of lubricant to the inner walls of a conduit along straight portions of said conduit; and

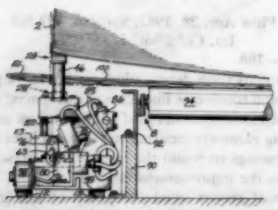
(b) applying proportionately larger amounts of said lubricant than is applied in step (a) to the shorter radius inner wall surface of the conduit at a bend in said conduit.

4,475,630

LIFTING DEVICE

Craig A. Jackson, Kent, Wash., and Leon R. Leadon, Portland, Oreg., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Jun. 14, 1982, Ser. No. 388,058
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 R **10 Claims**



1. In an apparatus for lifting an overhanging unit package of material resting on a conveyor line in order to enable insertion of a pull sheet under the package so that the pull sheet can then be grasped by a push/pull lift truck to remove the package from the conveyor line, the improvement which comprises:

a. a tiltable elevator means adapted to lie adjacent to and parallel to the conveyor line for placement under the overhanging edge of the unit package, said elevator means further comprising

(1) a longitudinal cross bar adapted to be disposed parallel to the conveyor line in a position where it can engage and support the package,

(2) longitudinally spaced apart jack means for raising and lowering the cross bar into and out of lifting engagement with the unit package, and

(3) a rigid member essentially parallel to the cross bar connecting the jacks, said member being tiltably mounted on a supporting base member,

said elevator means when raised allowing placement of a pull sheet beneath the unit package by passing it between the jacks and under the cross bar; and

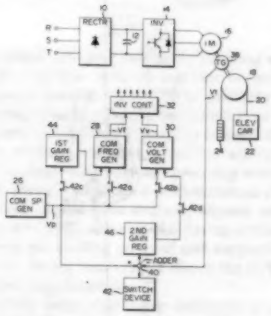
(b) means for tilting the elevator means so that after insertion of the pull sheet the cross bar can be arcuately moved away from the conveyor line from a position above to a position below the pull sheet, allowing the pull sheet to become accessible to the lift truck so that the package can be translated laterally off of the conveyor line onto the lift truck.

4,475,631

AC ELEVATOR CONTROL SYSTEM

Masami Nomura, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Chiyodaku, Japan

Filed Aug. 25, 1982, Ser. No. 411,477
Claims priority, application Japan, Aug. 25, 1981, 56-133025
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **9 Claims**



1. An AC elevator control system comprising: a DC source, an inverter connected to said DC source for inverting a DC power from said DC source to an AC power having a variable voltage and a variable frequency under the control of both a command voltage signal and a command frequency signal, an AC motor driven by said inverted AC power, an elevator car operated by said AC motor, and a circuit for changing said command frequency signal during a regenerative braking mode of operation of said AC motor so as to decrease a frequency of said AC power imparted to said AC motor to a magnitude which is smaller than that upon the initiation of said regenerative braking mode of operation, wherein said circuit generates said command frequency signal for causing an AC motor slip such that an electric power consumed as losses within said AC motor are made equal to an electric power generated by said AC motor as a regenerated electric power.

4,475,632

DISC BRAKE HAVING WEAR COMPENSATING MECHANISM

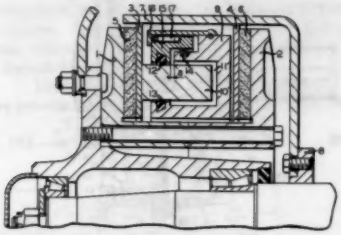
Joachim Feldmann, Neustadt, and Otto Friederichs, Garbsen, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 7, 1983, Ser. No. 464,548

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204188

Int. Cl.³ F16D *65/20, 65/52*

U.S. Cl. 188—71.4 **7 Claims**



1. In a disc brake having at least one brake member and at least one disc member with which said brake member is engageable to effect a brake application, actuating apparatus comprising:

(a) a pair of spreading members cooperatively arranged to form a chamber therebetween;

(b) a joining element between said pair of spreading members;

(c) a stop on one of said spreading members to limit the degree of axial movement of said joining element relative to said one of said spreading members;

(d) a first elastic ring between said joining member and the other spreading member to provide a fluid pressure seal and a friction coupling therebetween, said friction coupling effecting axial displacement of said joining element toward engagement with said stop, when fluid under pressure is supplied to said chamber to actuate said pair of spreading members and thereby force said at least one brake member into engagement with said at least one disc member;

(e) a second elastic ring between said joining element and said one spreading member to provide a fluid pressure seal for said chamber; and

(f) resilient means operatively disposed between said joining element and said one spreading member for exerting an axial force on said joining element in a direction away from said stop, so that upon the release of said fluid under pressure from said chamber, said joining element is shifted a predetermined distance away from said stop, whereby said friction coupling between said joining element and said other spreading member is effective to retract said other spreading member in a direction to effect disengagement between said at least one brake member and said at least one disc member and thereby release said brake application.

4,475,633

DISC BRAKE INCLUDING A MOVABLE ASSEMBLY

Jean-Louis Gérard, Paris, and Claude Le Marchand, Domont, both of France, assignors to Societe Anonyme DBA, Paris, France

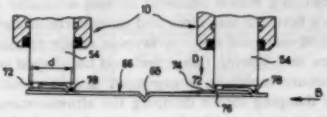
Filed Aug. 12, 1982, Ser. No. 407,388

Claims priority, application France, Sep. 28, 1981, 81 18216

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—73.45 **3 Claims**

1. A disc brake including a movable assembly having actuating means capable of urging a first friction element directly and a second friction element by reaction against the respective faces of a rotating disc, said movable assembly being mounted to slide by two small columns on a fixed support disposed near the disc, said small columns each having a cylindrical sleeve and a removable part, each sleeve having a groove and each removable part having one end of which has a screw thread secured in a threading formed in the fixed support and the other end of which has a part capable of being rotated by a suitable assembly tool, a locking element comprising a substantially flat plate being interposed between said sleeves and



removable parts, said locking element having at least one part with a length which is variable in a direction substantially parallel to the faces of the disc and passing through the axes of each of the small columns, the locking element having locking portions forming forks each engaging the groove of an adjacent end of a sleeve and fixing said locking element to said sleeves, and the forks directed in said direction which is substantially parallel to the plane of the disc and passing through the axes of the small columns.

4,475,634

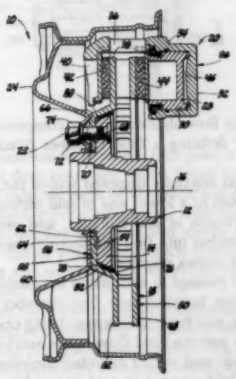
DISC BRAKE ROTOR DAMPING

Thomas A. Flaim, Troy; Glen Stephens, Ortonville, and Edwin J. Miller, Romeo, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1983, Ser. No. 469,647

Int. Cl.³ F16D *65/12*

U.S. Cl. 188—218 A **2 Claims**



1. In a disc brake assembly having a brake rotor rotatable about an axis and including a braking section formed as an annulus with axially opposite braking surfaces, said braking section being subject during brake actuation to noise-generating vibrations, and a bearing hub and flange also rotatable about said axis and adapted for mounting said brake rotor and a wheel to be braked; the improvement comprising:

a hat-shaped section including a crown portion on said brake rotor providing a mounting face for secure mounting face engagement with one side of said bearing flange and an intermediate portion joining said crown portion and said braking section;

said hat-shaped section having a frusto-conical inner surface formed on said intermediate portion, and said bearing

flange having a frusto-conical outer surface formed thereon complementary to said inner surface;

said bearing flange outer surface being so sized relative to said hat-shaped section frusto-conical inner surface that when said bearing flange and said hat-shaped section are in secure mounting engagement at said mounting face a predetermined conically extending space is defined between the inner surface of said hat-shaped section and the outer surface of said bearing flange on the axially opposite side of said brake rotor from said wheel;

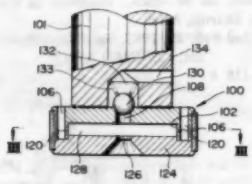
and damping means received in said conically extending space between said inner and outer surfaces and engaged by said inner and outer surfaces in axially pressed relation when said bearing flange and said hat-shaped section are in secure mounting engagement at said mounting face, said damping means damping the aforementioned vibrations set up in said braking section during braking by the disc brake assembly.

4,475,635

VORTEX FLOW SHOCK ABSORBER WITH ONE-WAY VALVE

Kazuroh Iwata, Kamakura; Naoto Fukuhsima, Fujisawa, and Kunihiko Hidaka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 9, 1981, Ser. No. 310,063
Claims priority, application Japan, Oct. 14, 1980, 55-145180
Int. Cl.³ F16F 9/34
U.S. Cl. 188—282 **14 Claims**



1. A vortex flow shock absorber comprising:

a cylinder defining a fluid chamber filled with a working fluid;

a piston rod coaxially disposed within the cylinder;

a piston fixed to a lower end of said piston rod and reciprocally movable in said cylinder, said piston dividing said fluid chamber into first and second chambers and having therein a vortex chamber;

a first fluid passage in said piston for establishing fluid communication between said first chamber and said vortex chamber, said first fluid passage being operable to produce a vortex pattern fluid flow when working fluid is introduced into said vortex chamber therethrough;

a second fluid passage in said piston for establishing fluid communication between said vortex chamber and said second chamber, said second fluid passage being operable to produce a radial pattern fluid flow in said vortex chamber when said working fluid is introduced into said vortex chamber therethrough;

a pressure relieving passage extending through said piston and said piston rod for establishing fluid communication between said vortex chamber and said first chamber; and

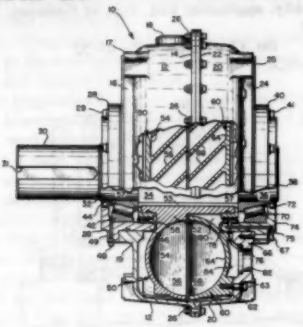
a pressure relief valve biased to normally close said pressure relieving passage, said valve being responsive to a fluid pressure in said vortex chamber exceeding a predetermined set pressure to open said pressure relieving passage to permit fluid flow from said vortex chamber to said first chamber therethrough.

4,475,636

WATER BRAKE

Jayanth P. Rao, Sugarland, Tex., assignor to Baylor Company, Sugarland, Tex.

Filed May 4, 1982, Ser. No. 374,925
Int. Cl.³ F16D 57/02
U.S. Cl. 188—296 **8 Claims**



1. A water brake comprising:

(a) a hollow relatively wide substantially wheel-shaped brake housing having an outer substantially circular peripheral surface and two spaced and parallel substantially flat circular side walls each of which has a central axial opening,

(b) the brake housing formed by two housing sections which are joined along a circular planar surface along the outer circular peripheral surface,

(c) a seal and bearing assembly containing a roller bearing and an adjacent outer seal mounted in the central opening of each of the side walls and disposed along a central axis extending through the brake housing,

(d) a single drive and support shaft extending along the central axis and through and in engagement with the roller bearing and an adjacent seal in each of the seal and bearing assemblies,

(e) a rotor disposed within one housing section and having a cylindrical hub mounted on the shaft and supported between the bearings of the two seal and bearing assemblies,

(f) the rotor having a circular vane support section of cup-shaped cross-section having inner and outer peripheral surfaces and within which a plurality of radially extending vanes are supported,

(g) the vanes extending in an angled direction with respect to the line of travel of the rotor and terminating their free edges with the outer and inner edges of the vane support section at a first common plane disposed perpendicular to the hub axis,

(h) a complementary configured stator fixedly mounted within the other housing section and including a thin circular radially extending vane support section facing the rotor vanes and which has a plurality of radially extending vanes extending in a direction parallel to those of the rotor and terminating at an edge along a second common plane extending parallel and closely spaced from said first common plane,

(i) water inlet and outlet means associated with the housing for maintaining a supply of water through the housing which is engaged by the rotor and stator vanes,

(j) inner high pressure seal means disposed between the bearings and the cup-shaped vane support of the rotor and stator for providing a water seal,

(k) the opposed rotor and stator vane support sections defining a high-pressure chamber in which the edges of their inner and outer peripheral surfaces are disposed close to each other along the first common plane to restrict leak-

age of the working fluid from the annular chamber formed between the rotor and stator to maintain high pressure,

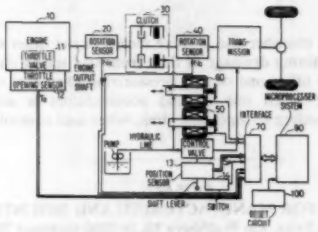
(l) an annular high pressure chamber adjacent the annular gap formed between the rotor and stator peripheral surfaces and the inner seal means, and

(m) high pressure bleed off means connected between the high pressure chamber and a lower pressure area for reducing high pressure build-up within the high pressure chamber.

4,475,637
AUTOMATIC CLUTCH CONTROL SYSTEM

Tomio Oguma, Anjyo; Kouichiro Hirosawa, Kariya, and Tsutomu Mitsui, Chiryu, all of Japan, assignors to Aishin Seiki Kabushikikaisha, Kariya, Japan

Filed Mar. 12, 1982, Ser. No. 357,518
Claims priority, application Japan, Mar. 27, 1981, 56-45327
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—0.052 **10 Claims**



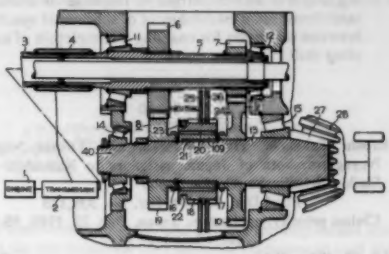
1. An automatic clutch control system for a vehicle including a transmission having a shift lever and a clutch havihg a drive shaft and a driven shaft comprising; first speed detecting means for detecting the rotational speed of said drive shaft of said clutch, second speed detecting means for detecting the rotation of speed of said driven shaft of said clutch, direction detecting means for detecting the rotational direction of said driven shaft of said clutch, position detecting means for detecting the position of said shift lever, clutch engagement control means for controlling the degree of engagement of said clutch, clutch energizing means energizing said clutch engagement control means, and electronic control means connected to said first speed detecting means, said second speed detecting means, said direction detecting means, said position detecting means, and said clutch energizing means for generating and applying a clutch engagement control signal to said clutch energizing means to response to the speed of said drive shaft of said clutch and the speed of said driven shaft of said clutch and for retarding the clutch engagement by a predetermined time whenever the direction of rotation of said driven shaft of said clutch is in contradistinction to the rotational direction normally determined by said shift lever.

4,475,638
TRANSMISSION BRAKE AND CLUTCH

Stephen J. McCormick, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 17, 1981, Ser. No. 331,537
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—4 A **10 Claims**

1. A vehicle transmission and brake comprising a transmission housing, an input shaft rotatably mounted in said housing, a drive shaft driving a differential, bearings rotatably supporting each end of said drive shaft in said housing, at least two gearsets on said shafts, a clutch collar reciprocally mounted on said drive shaft between said bearings for selectively and alternatively connecting each of said gearsets to drive said drive shaft, at least one brake disk nonrotatably connected to said

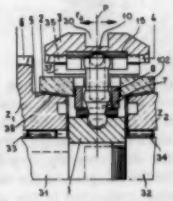


clutch collar, a vehicle brake including said brake disk for selectively braking said drive shaft.

4,475,639
CLUTCH ASSEMBLY FOR GEAR TRANSMISSION

Erich Tausend, Senden, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,868
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125424
Int. Cl.³ F16D *23/08*
U.S. Cl. 192—53 G **12 Claims**



1. In a gear transmission having a first gear, a second gear coaxial with said first gear, said gears being provided with respective sets of external teeth of like pitch and diameter, and an internally toothed sleeve meshing only with the teeth of said first gear in a decoupling position, said sleeve being axially slidable into a coupling position in which it meshes with the teeth of said first and second gears for positively connecting same to each other,

the combination therewith of a synchro ring coaxially interposed between said gears with freedom of limited rotation relative to said first gear, said synchro ring and said second gear being provided with confronting clutch surfaces separated by a small clearance from each other in the decoupling position of said sleeve, a detent member universally jointed to said first gear, a free end of said detent member extending substantially radially into an axially disposed inner guide groove of said sleeve in said decoupling position while being positively entrainable by said synchro ring in either peripheral direction, said guide groove being provided with lateral pockets to receive the free end of said detent member upon a relative angular disalignment of said synchro ring and said first gear from a normal median position, such disalignment resulting from a speed difference between said first and second gears upon the establishment of frictional contact between said clutch surfaces by an axial thrust exerted upon said synchro ring via said detent member whose free end is

indexable on said sleeve for peripheral entrainment thereby upon an incipient axial coupling shift thereof, said lateral pockets being bounded by camming edges dislodging said free end therefrom in response to a continuing axial thrust upon establishment of substantial synchronism between said gears for enabling a completion of said coupling shift.

4,475,640

DAMPER DISC

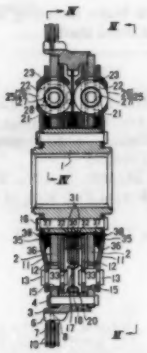
Hiroshi Takeuchi, Higashi-Osaka, and Yoshio Nishimura, Neyagawa, both of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Dec. 9, 1981, Ser. No. 329,123

Claims priority, application Japan, Dec. 22, 1980, 55-182634

Int. Cl.³ F16D *3/14*

U.S. Cl. 192—70.17 **7 Claims**



1. A damper disc comprising a hub splined to an output shaft; at least two axially spaced annular flanges rotatably fitted to an outer periphery of the hub; annular side plates arranged at both sides of each flange; torsion springs extending substantially in the disc rotating direction and disposed in openings formed in the flanges and the side plates, each pair of the side plates being connected to the adjacent flange by the torsion springs, one of each side plate pair being connected to the hub; and a torque input member including a ring gear connected to the flanges and an annular input plate having friction facings and being axially slidably connected to the ring gear.

4,475,641

DOUBLE ACTING HYDRAULIC ACCUMULATOR FOR POWER SHIFT TRANSMISSION

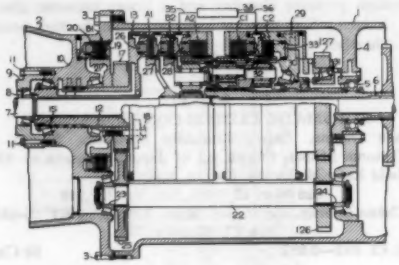
Gerardus M. Ballendux, Waukesha, and Stephen J. McCormick, Milwaukee, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 21, 1981, Ser. No. 313,381

Int. Cl.³ F16D *25/10*; F15B *15/22*

U.S. Cl. 192—87.15 **15 Claims**

1. A hydraulic transmission shift control system comprising, a source of pressurized fluid, a transmission shift control valve, a fluid pressure modulating valve connecting between said control valve and said source of pressurized fluid, at least two hydraulic actuators each for engaging one clutch in the transmission and each connected to a control valve, a double acting hydraulic accumulator connected between said two hydraulic actuators including, a hydraulic cylinder having an end wall in each end, two pistons received in said hydraulic cylinder defining two expansible pressurizing chambers with a spring chamber intermediate said pistons with each one of said pressurizing chambers connected to one of said hydraulic actuators to cushion pressure pulses in the hydraulic system, the spring in said spring chamber normally biasing said pistons to cause each pressurizing chamber in said accumulator to return toward a minimum volume, a valve means in one of said pistons isolating one of said pressurizing chambers from said spring chamber in said accumulator when pressurized fluid is admitted to said



pressurizing chamber and a valve means in the other of said pistons permitting drainage of fluid from said spring chamber through the other one of said pressurizing chambers of said accumulator when one of said accumulators is actuated thereby providing an automatic drain when said control valve is open.

4,475,642

SYSTEM FOR MANUFACTURING AND MOUNTING

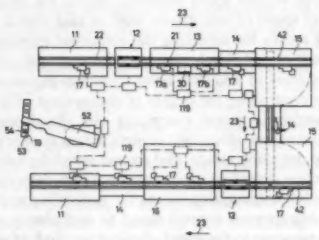
Hans-Ulrich Fritz, Am Wolfsberg 10, D-7000 Stuttgart 70, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,563

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112911

Int. Cl.³ B65G *21/20*

U.S. Cl. 198—345 **28 Claims**



1. A system for conveying work pieces along a conveying direction, comprising:

work carriers for supporting the workpieces, the work carriers having engagement members running at least in the conveying direction;

a plurality of system units having guideways for the work carriers extending in the conveying direction, the system units with their guideways being aligned one after another for sequentially receiving the work carriers, each of the system units having at least one independently drivable and controllable drive unit with a rotary drive means movably driving the work carriers on the guideways and with respect to the guideways, the drive means and engagement members being constructed for reciprocal positive engagement;

indexing means on at least one of the system units, the indexing means positively engaging the engagement members for accurately positioning the work carriers in at least one predetermined indexing position along the conveying

direction, the indexing means urging the work carriers against at least one of the guideways and accurately positioning the work carriers with respect to the guideways, transverse to the conveying direction.

4,475,643

STORAGE DEVICE FOR PACKAGES

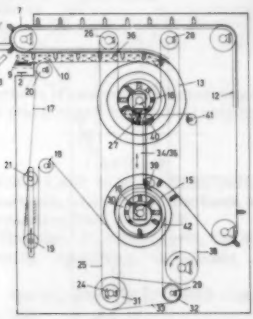
Uwe Klingenberg, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,481

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3137948

Int. Cl.³ B65G *1/04, 61/28*

U.S. Cl. 198—347 **15 Claims**



1. Apparatus for temporarily storing rows of articles removed from a conveyor system and returning such articles to the conveyor system as required comprising:

storage conveyor means, said storage conveyor means including a belt having spaced projections on at least a first side thereof, said spaced projections defining open-sided channels which are oriented generally parallel with respect to the direction of motion of the conveyor system, said belt in part being in proximity to the conveyor system;

means for imparting motion to said storage conveyor means belt, said motion imparting means being reversible and causing said belt projections to contact and move groups of articles from the conveyor system and return such groups of articles to the conveyor system; and

receiving means, said receiving means including a receiving roll, said storage conveyor means belt being wound onto and off of said receiving roll in response to said motion imparting means whereby rows of articles positioned between said belt projections may be temporarily stored in radially closed compartments formed between successive windings of said storage conveyor means belt.

4,475,644

METHOD AND APPARATUS FOR FEEDING LUMBER

Jorma Raippo, Heinola, Finland, assignor to Plan-Sell Oy, Finland

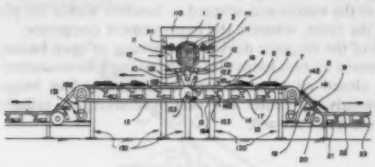
Filed Jun. 16, 1982, Ser. No. 389,105

Claims priority, application Finland, Jun. 17, 1981, 811893

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—407 **13 Claims**

1. A method for feeding side boards that are cut from a piece of lumber with a device including at least one side guard for holding a board against a piece of lumber from which it was cut, a first conveyor for transferring the piece of lumber and side board to the side guard, a transverse conveyor for conveying side boards, stop means for holding boards on the transverse conveyor from moving on the transverse conveyor and at least one dropping flap which is movable to direct a side board from the first to the transverse conveyor, comprising, opening the side guard to release a side board from a piece of lumber, positioning the dropping flap to direct the side board



onto the transverse conveyor, and moving the stop means into a path of the side board on the transverse conveyor to shift the side board on the transverse conveyor.

4,475,645

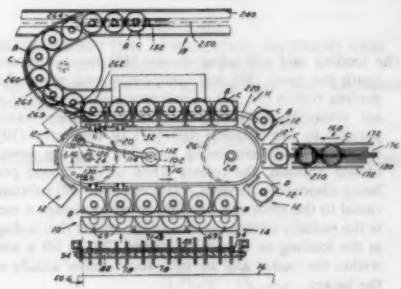
MACHINE FOR APPLYING BASE CUPS TO BOTTLES

William P. Young, Farmington, Mich., assignor to William P. Young Co., Farmington, Mich.

Division of Ser. No. 103,566, Dec. 14, 1979, Pat. No. 4,312,439. This application Jan. 21, 1982, Ser. No. 341,330

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—420 **12 Claims**



1. A machine for applying base cups to bottles, comprising a conveyor movable along a predetermined path and having a series of support units each comprising a bottle holder for holding a bottle upright and a base cup seat for holding a base cup upright supported beneath said bottle holder for movement toward and away from the bottom of a bottle held by said bottle holder, means for loading bottles upright on said respective bottle holders, means for loading base cups upright on said respective base cup seats, and means downstream from said bottles and base cup loading means in the direction of conveyor movement for elevating said base cup seats to apply the base cups held thereby to the bottles held by the bottle holders thereabove.

4,475,646

APPARATUS AND METHOD FOR CONVEYING FLAT MEMBERS THROUGH A PROCESSING UNIT

Frank F. Waas, Bad Homburg, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 22, 1982, Ser. No. 435,930

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144355

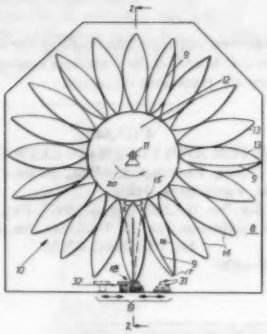
Int. Cl.³ B65G *47/84*

U.S. Cl. 198—480 **18 Claims**

1. An apparatus for conveying flat members previously processed on one or both surfaces through a processing unit in where there is a rotor having a plurality of receptor devices for

accepting the members individually, the receptor devices being situated on the periphery of the rotor, the rotor being rotatable to displace the receptor devices in a stepwise fashion past a predetermined loading/unloading station, and means for loading and unloading the members being disposed in adjacency to the station and adapted to function within the periphery of the rotor, wherein the improvement comprises:

each of the receptor devices comprising an open basket (13) formed by two loops (14) each having a cross-section that is closed all around, each basket expanding bulge-like towards the center and sharply converging radially inward and outward;



the loading and unloading means (19) being disposed beneath the rotor (10) and comprising two rows of transporting rollers (31, 32) a predetermined number of which are rotatably driveable, each row of rollers extending parallel to the rotation axis (11) of the rotor (10), the rollers in each row being movable from an open to a closed position, the rollers when in the closed position being disposed with their rotational axes (40) substantially radial to the rotor and being adapted to engage a member in the radially outermost area of the basket that is disposed at the loading or unloading station (28) to lift a member within the basket and advance the member axially out of the basket.

4,475,647

ROPE BUCKET ELEVATOR

Gerts Diner, 1314 Ocean Parkway, Apt. 4J, and Liza Kremerova, 2050 18st Ave., both of Brooklyn, N.Y. 11230

Filed Jul. 12, 1982, Ser. No. 397,495

Int. Cl.³ B65B *17/36*

U.S. Cl. 198—711 **4 Claims**

1. A rope bucket elevator comprising:

a. a drive means, including at least one drive wheel having a predetermined radius;

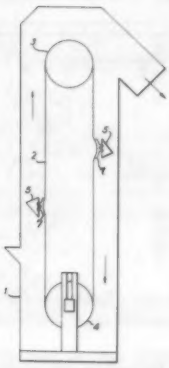
b. a tensioning wheel having a radius approximately equal to said predetermined radius;

c. an elongated endless band of rope disposed about the peripheries of the drive and tensioning wheels so that portions of an inner surface of the rope are in close abutting relationship with peripheral surface sections of each of said wheels, respectively, said wheels being sufficiently spaced apart to eliminate substantially all slack from the rope;

d. a plurality of buckets spaced along the rope and attached thereto by individual clamp assemblies, each said assembly including:

(i) a clamp having a bowed base with a radius of curvature less than said predetermined radius, said base also having lateral surfaces and a bottom surface with a logitudinal groove centered along substantially its entire length, said groove being adapted for receiving and accommodating a section of the rope, and said base having in addition a pair of elongated, spaced legs of one piece with a top surface thereof and extending away from said top surface; and

(ii) a U-shaped bracket having a bent portion with a pair of spaced legs extending therefrom, said bracket being oriented with its bent portion in firm abutting contact with an inner surface of a section of the rope while an outer surface of said section is snugly received in and accommodated by said groove, and with its legs extending adjacent to the respective lateral surfaces of the clamp base and having end regions extending beyond the upper surface of said base and lying in a plane that extends between the clamp legs;



e. means for rigidly attaching a rear wall of each bucket to the clamp legs; and

f. means for tightly securing the end regions of the bracket legs so that the rope section is snugly wedged between the groove in the clamp base and the bent portion of the bracket,

said clamp assemblies being adapted for permitting smooth and rapid continuous motion of the buckets around the drive and tensioning wheels with a recess being formed between the bottom surface of each clamp base and the peripheries of each of said wheels, so that material can be loaded in the buckets at a bottom point of their path around the rope and emptied at some other point along said path.

4,475,648

BELT CONVEYOR

Raymond L. Weeks, Oxford, Miss., assignor to FMC Corporation, Chicago, Ill.

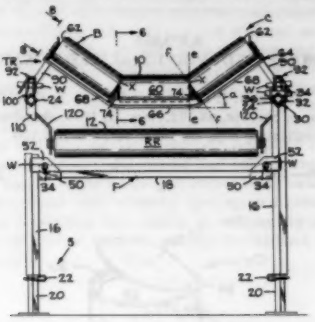
Filed Dec. 7, 1981, Ser. No. 328,154

Int. Cl.³ B65G *39/12*

U.S. Cl. 198—830 **4 Claims**

1. A belt conveyor of the type having longitiudinal, laterally spaced side rails having upper wall portions mounted on said side rails comprising downwardly diverging walls, a transverse roll supporting base beam structure and means attached to the base beam structure including a wedge and a wedge receiving aperture for mounting said base beam structure on said upper wall portions the improvement comprising: elongate longitudianl notches in said upper wall portions of said side rails and a longitudinal round rod (200) welded to the inside of said side rails along the upper edges of the notches whereby said

transverse roll supporting base beam structure is retained on said side rails by said wedge means passing through said wedge



receiving apertures of said means for mounting said base beam structure and said elongate longitudinal notches in said rails.

4,475,649

STOWAGE CASE FOR AN ELECTRIC CORD

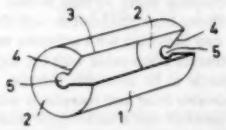
Willem R. Haarbosch, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,410

Claims priority, application Netherlands, Jan. 8, 1982, 8200052

Int. Cl.³ B65D *85/00*; N01B *7/00*

U.S. Cl. 206—328 **4 Claims**



1. A storage case for an electric cord, comprising:

a shell including an elongate central member fixed to two opposed end members, the central and end members forming a cord storage space between them, the longitudinal axis of the central member being oriented in a direction perpendicular to the end members, the central member forming an open slot for the insertion or removal of a folded cord into or from the storage space, the slot having substantially constant dimensions and extending continuously from one end member to the opposed end member in a direction parallel to the longitudinal axis, at least one end member having a cord passage therethrough and also having a substantially V-shaped aperture communicating with the passage and with the slot.

4,475,650

CASE FOR DRAFTSMAN

Joseph De Fazio, Jr., 216 Nelson Run Rd., Pittsburgh, Pa. 15237

Filed Jul. 8, 1983, Ser. No. 511,833

Int. Cl.³ H45C *11/36*; B44D *3/00*

U.S. Cl. 206—371 **5 Claims**

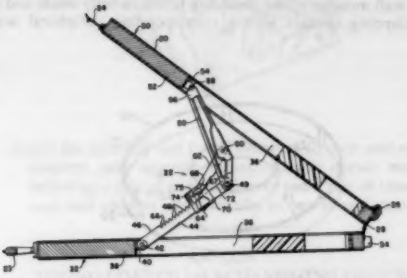
1. A case for carrying or storing drafting materials, said case comprising

a bottom portion containing a plurality of compartments or portions having therein hollowed spaces so shaped as to receive snugly various implements and supplies useful in drafting including a T square,

a lid portion hingedly connected at a first one of its sides to a side of said bottom portion, and latchingly connected on one of its sides opposite to said first one of its sides to a corresponding side of said bottom portion,

a handle means,

an exterior face of said lid portion being adapted to provide a drawing surface,



said case particularly comprising a latching hinge means operatively connected interiorly of said case to said bottom and lid portions and serving to permit said lid portion to be retained while the drawing surface is in use at a desired one of a plurality of different positions with respect to the horizontal.

4,475,651

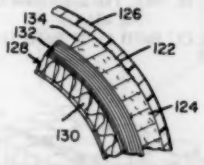
ROLL-WRAPPING APPARATUS, METHOD AND INTERMEDIATE PRODUCT

Bertram F. Elsner, Hanover, Pa., assignor to Elsner Engineering Works, Inc., Hanover, Pa.

Filed Nov. 5, 1981, Ser. No. 318,623

Int. Cl.³ B65D *85/66*

U.S. Cl. 206—389 **5 Claims**



1. An intermediate product comprising a roll, a loose continuous envelope formed of transparent heat shrink film completely surrounding the circumference of the roll, a label formed of non-heat shrink material confined between the roll and the envelope and a bond securing part of the label to the envelope, the remainder of the label being free of the envelope, whereby the bond holds the label in position on the envelope and the film slides across the remainder of the label without buckling as the envelope is shrunk onto the roll.

4,475,652

TAPE DISPENSING PACK

Robert A. H. Heard, Backwell, England, assignor to Signfix Limited, Bristol, England

Filed Feb. 22, 1983, Ser. No. 468,291

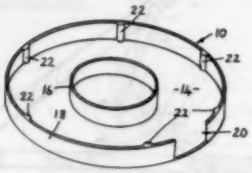
Claims priority, application United Kingdom, Mar. 1, 1982, 8205890

Int. Cl.³ B65D *85/67, 85/04*; B65H *75/40*

U.S. Cl. 206—409 **2 Claims**

1. A tape dispensing pack comprising a flat toroidal container, having two annular walls spaced apart and bridged by radially inner and outer peripheral walls, the annular interior space thus defined containing concentrically a coil of flexible resilient metal tape, the outer peripheral wall having an aper-

ture through which one end of the tape can be drawn, the inner peripheral wall defining an open central space, the container being made from two mouldings, each comprising a said annular wall and inner and outer peripheral wall members arranged so that the same two mouldings can be telescopically interfitted to varying extents and secured to form containers of different depths to accommodate different widths of tape, a peripheral wall member of one moulding fitting radially inside and in overlapping contact with a corresponding peripheral wall



member of the other moulding whereby together they make up at least a portion of the peripheral walls joining the two said annular walls, means securing the overlapping peripheral wall members together at a degree of telescopic interfitment of the two mouldings appropriate to the width of the tape in the coil, the inside surface of the outer peripheral wall being provided with a series of circumferentially spaced inwardly directed projections for engaging the outer periphery of the coil of tape and preventing its contact with the major portion of said inside surface.

4,475,653

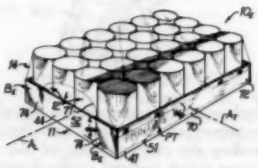
PACKAGE AND PROCESS OF FORMING SAME

John E. Ullman, Huntingdon Valley, Pa., assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 683,611, May 5, 1976, , and Ser. No. 322,443, Nov. 18, 1981,. This application Oct. 14, 1982, Ser. No. 434,439

Int. Cl.[3] **B65D** *65/02;* **B65B** *53/02*

U.S. Cl. 206—497 **15 Claims**



1. A multi-unit package comprising:

a cellulosic tray including a bottom wall and a pair of spaced apart upstanding side walls along opposite sides of the bottom wall;

a group of articles on said bottom wall between said side walls; and

a flexible film sheet extending over said group of articles and overlapping said tray side walls, said film sheet overlying said side walls of said tray to form a skirt and bonded with heat and pressure to each of said tray side walls by its own substance with a primary bond extending along the length of said side wall, the primary bond having a height less than the height of said walls and located adjacent that edge of said side wall opposite said bottom wall and with a skirt bond bonding that skirt portion of said film sheet between said primary bond and the edge of said film sheet along the length of said side wall, the skirt bond having been made subsequent to the primary bond by sequentially heating and pressing said skirt portion against said tray side wall so that the section of said skirt portion raised to bonding temperature at any one time has a length less than the length of said tray side walls.

4,475,654

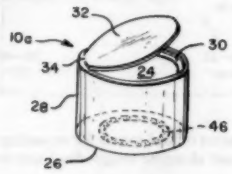
STORAGE AND INDIVIDUALIZED DOSAGE CONTAINER

Lawrence C. Fruchter, 151 W. 13th ST., New York, N.Y. 10011

Continuation of Ser. No. 68,792, Aug. 22, 1979, abandoned. This application Sep. 23, 1983, Ser. No. 535,120

Int. Cl.[3] **B65D** *85/56, 83/04*

U.S. Cl. 206—538 **2 Claims**



1. A storage and individualized dosage container assembly for pills, tablets and the like comprising:

a hollow storage receptacle including a bottom wall and sidewalls which terminate in an open mouth;

and a closure cap comprising a bottom wall, sidewalls defining with said bottom wall a compartment dimensioned to contain pills, tablets and the like of the type stored within said receptacle but in a lesser quantity, the said closure cap being cooperable with said receptacle to selectively seal same, an opening being formed in said closure cap at a location remote from the bottom wall thereof,

said closure cap provided with adhesive means on the bottom wall thereof cooperable with the top of a closure for said receptacle to be securable thereon, said closure cap being removable from said receptacle with said closure as a unitary member and a lid integral with the closure cap and movable selectively in relation to said opening therein between first and second positions in which the opening is respectively sealed and exposed to provide access to the contents of said compartment.

4,475,655

PACKING CONTAINER

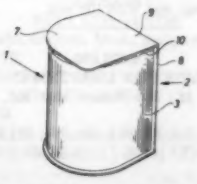
Pär Andersson, and Rolf Viberg, both of Bjärred, Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Jul. 19, 1982, Ser. No. 399,831

Claims priority, application Sweden, Aug. 13, 1981, 8104813

Int. Cl.[3] **B65D** *17/40*

U.S. Cl. 206—624 **8 Claims**



1. A packing container, comprising:

a first U-shaped wall portion defining a back wall and top and bottom end walls of the container; and

a second U-shaped wall portion which is sealed to said first wall portion to define a closed container, said second wall portion defining front and side walls of the container, and

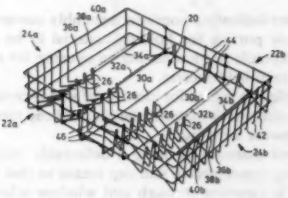
second wall portion including a weakening line adjacent the top end wall of the container with a central portion of said second wall being continuous and extending across said weakening line, said top end wall and an upper segment of said second wall portion above said weakening line defining a lid for the container, said weakening line being provided for severing said upper segment from said second wall portion to release said lid for hinged movement relative to said back wall, said weakening line being two mutually parallel, vertically displaced cut lines on opposite sides of said second wall portion, the cut line on an outside of the packing container being situated nearest the top end wall, whereby opening said container along said weakening line creates an oblique rupture line between the cut lines for guiding the lid back to a closed position.

4,475,656

DISHWASHER TRAY

John D. Collier, Cambridge, Canada, assignor to Greening Donald Co. Ltd., Hamilton, Canada

Filed Mar. 5, 1981, Ser. No. 240,900
Claims priority, application Canada, Mar. 6, 1980, 347191
Int. Cl.³ A47G *19/08*
U.S. Cl. 211—41 **3 Claims**



1. An open-topped and generally rectangular tray of the type used to support dishes in a dishwasher, the tray comprising:

a floor made up of central portions of a first group of longitudinal rods of a first length and by central portions of transverse rods having a second length and attached to the central portions of the longitudinal rods orthogonally and shaped to support said dishes in a selected arrangement;

a pair of side walls made up of upstanding end portions of the transverse rods and by central portions of a second group of longitudinal rods also of said first length and attached to the upstanding end portions othogonally; and

a pair of end walls made at least in part of upstanding end portions of the first group of longitudinal rods and by end portions of the second group of longitudinal rods attached othogonally to those of the upstanding end portions of the first group adjacent the side walls, the second group of longitudinal rods extending continuously between said central and end portions of the second group to rigidify the side and end walls.

4,475,657

SUSPENSION FOLDER SUPPORT SYSTEM

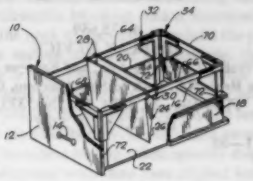
Lewis L. Albery, 14429 Dante Ave., Dolton, Ill. 60419

Filed May 17, 1982, Ser. No. 378,770
Int. Cl.³ B42F *17/08*
U.S. Cl. 211—46 **8 Claims**

1. A suspension file support system, comprising:

a plurality of rigid frame members, and

a plurality of corner members, each said corner member being planar with first and second sides, a flexible hinge between said first and second sides allowing said first and second sides to be bent to form a right angle whereby said corner members may be positioned in a corner of a drawer containing said suspension file support system, and



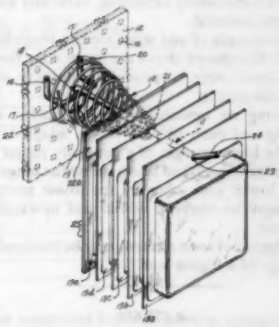
means for securing said frame members to each said corner member, said securing means of each corner member including a pair of parallel sleeves and a pair of channels, each said channel perpendicular to one of said sleeves.

4,475,658

SPRING-LOADED MERCHANDISING DEVICE

Kenneth S. Roberts, Gig Harbor, Wash., assignor to Roberts Display Corporation, Gig Harbor, Wash.

Filed Mar. 14, 1979, Ser. No. 20,524
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—54.1 **5 Claims**



1. A merchandise display assembly for displaying merchandise items comprising:

merchandise display support means;

at least one merchandise display hook projecting from said support means for slidably suspending merchandise items therefrom, said display hook having a front end and a back end, said front end of said display hook including a retainer means for retaining merchandise items from sliding off said front end of said display hook, said display hook being attached to said support means at said back end, said display hook including a downturned back portion secured to a transverse wire rod, said transverse wire rod having upturned mounting hooks at each end thereof for securing said display hook to said support means; and

a conical compression coil spring operatively associated with said display hook for maintaining said merchandise items pushed forward toward said front end of said display hook, said spring including a large diameter end and a small diameter end, said large diameter end of said spring including a retaining hook demountably attachable to said back end of said display hook, said retaining hook of said spring operably extending downwardly behind said transverse wire rod and around the front of said down-turned back portion of said display hook and further including a forwardly disposed semicircle portion cooperably engageable around the front of said down-turned back portion of said display hook for preventing

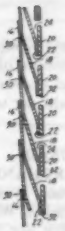
said retaining hook of said spring from being twisted loose.

4,475,659

DISPLAY DEVICE

William S. Wells, 7 Melville Ave., and Enrique Fernandez-Lanz, 37 Indian Rock Rd., both of San Anselmo, Calif. 94960

Filed Dec. 21, 1981, Ser. No. 333,027
Int. Cl.³ A47F 5/08
U.S. Cl. 211—55 3 Claims



1. A display device for displaying generally planar elements and the like comprising:

a plurality of horizontally extending, vertically spaced strips of yieldable material,

means securing each of said strips along a hinge line thereon parallel to and spaced above the lower edge thereof, to an adjacent lower strip, to provide a plurality of leaves in lapping relationship,

means forming an upwardly opening pocket along said lower edge of each of said leaves adapted to receive therein the lower margin of a generally planar element,

said lower edge of each leaf being below the hinge line of the adjacent lower leaf, whereby the lower margin of said element may be received within said upwardly opening pocket, and

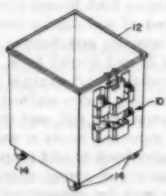
the upper margin of such element may be received under the lower edge of a higher leaf.

4,475,660

CADDY FOR JANITORIAL SUPPLIES

Charles R. Cain, 259 Winn St., Burlington, Mass. 01803

Filed May 26, 1983, Ser. No. 498,484
Int. Cl.³ A47F 7/00
U.S. Cl. 211—113 5 Claims



1. A caddy for janitorial cleaning supplies, said caddy comprising:

a substantially rigid, sheet-form standard having front and rear faces;

at least one compartmented unit having a plurality of interconnected vertical wall portions joined by a common, generally planar floor portion to define a single tier of open top cells in which cells at the ends of said tier are offset rearwardly from cells located in the central region of said tier, thereby to present a rearwardly concave, arc-like configuration in said unit, said compartmented unit being secured to the front face of said standard and so that the bottom of said standard is flush with the floor of said unit; and

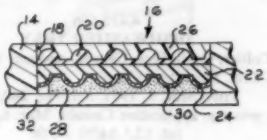
suspension means including a carrying handle and a pair of hooks positioned at the upper portion of said standard, said hooks having a rearwardly extending reach extending beyond a plane containing the rearwardmost surfaces of the caddy.

4,475,661

TAMPER-INDICATING CONTAINER ASSEMBLY

Robert B. Griffin, 252 Tunxis Rd., West Hartford, Conn. 06107

Filed Dec. 3, 1982, Ser. No. 446,684
Int. Cl.³ A61J 1/00
U.S. Cl. 215—366 17 Claims



1. A tamper-indicating container assembly comprising:

a receptacle portion for holding material to be dispensed, said receptacle portion having an opening for removal of the material held therein,

a removable cap means for closing off said receptacle opening to maintain the material therein, said cap means having a transparent window,

an indicator assembly forming a defaceable visual pattern and being connected to said cap means so that said visual pattern is viewable through said window when said cap means is mounted on said receptacle portion, and

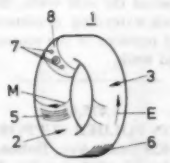
means for binding said visual pattern to said receptacle so that movement of said cap means relative to said receptacle defaces said visual pattern so as to be substantially irreparable with said defaced visual pattern being viewable through said window.

4,475,662

TOROIDAL PRESSURE VESSEL OF COMPOUND MATERIAL

Goetz Mandel, Sauerlach, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Nov. 22, 1982, Ser. No. 443,313
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147867
Int. Cl.³ B65D 6/02, 90/04, 88/02
U.S. Cl. 220—3 10 Claims



1. A pressure vessel comprising:

an inner core defining a sealed vessel space which has a toroidal shape (2) which has an inner wall curved in radial cross-section and has an outer wall of cylindrical contour (3) and is axially straight in radial cross-section;

a first plurality of filament windings extending in a meridian

direction on said core which lies within radial planes of said core for equalizing constant tangential and meridional stresses of said core with constant filament tension in said first plurality of filament windings; and

a second plurality of filament windings on said outer cylindrical contour extending substantially normally to the meridian direction and equitorially of said cylindrical contour.

4,475,663

PROCESSES AND MEANS FOR PERFUMING PACKAGING CONTAINERS

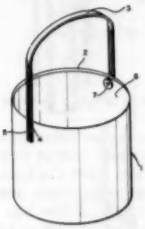
Peter Kittscher, Kaarst; Klaus Schumann, Erkrath; Theodor Altenschöpfer, Düsseldorf; Wolfgang Haumann, Hilden, all of Fed. Rep. of Germany, and Heinz G. Smolka, Randburg, South Africa, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,467

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227370

Int. Cl.³ B65D *51/30, 81/28;* **A61L** *3/00*

U.S. Cl. 220—87 **8 Claims**



7. A perfumed absorbable carrier material in the form of a disc for attachment to an inside wall of a packaging container, wherein said disc contains a substantially air impermeable layer on one side thereof which is composed of metal or a synthetic foil, and wherein said disc is also adapted to act as a gasket on the inside wall of a packaging container for attachment with a rivet through the wall of the packaging container to a handle or strap.

4,475,664

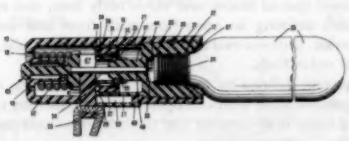
AUTOMATIC INFLATOR

Glenn H. Mackal, 4923 59 Ave. S., Bayway Isles, St. Petersburg, Fla. 33702

Filed Jul. 29, 1982, Ser. No. 402,917

Int. Cl.³ B63C *9/24*

U.S. Cl. 222—5 **9 Claims**



1. An automatic inflator which inflates gas-inflatable articles by the release of compressed gas from a gas-containing capsule by the piercing of a sealing means on the capsule, comprising an elongated cup-shaped housing having an open rear end and a generally closed front end, the rear end of the housing receiving the neck of a compressed gas-containing capsule with the sealing means on the capsule disposed within the housing, a plunger disposed adjacent to the forward, generally closed end of the housing, the plunger being adapted to reciprocate longitudinally of the housing, a piercing pin mounted on the plunger resilient means at the forward end of the housing for constantly urging the plunger and the piercing pin thereon longitudinally rearwardly of the housing toward the sealing means of the capsule, and a releasable blocking means interposed between the plunger and the neck of the capsule to hold the piercing pin spaced from the sealing means of the capsule, the blocking means including a water-sensitive means which when wet releases the blocking means so that the resilient means moves the piercing pin toward the capsule whereby the sealing means on the capsule is pierced thereby, the blocking means comprising cooperating members having telescopically disposed inner and outer parts disposed with their axes aligned longitudinally of the housing, one of said members of the blocking means engaging the capsule and the other of said members of the blocking means being disposed in thrust transmitting relationship with the plunger.

4,475,665

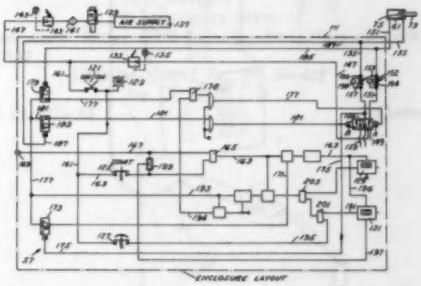
AIR LOGIC CONTROLLER AND METERING PUMP UNIT FOR AN APPARATUS FOR TRANSFERRING, PUMPING AND METERING LIQUID CHEMICALS

Patrick H. Norton, Birmingham, Mich., assignor to Chemical Handling Equipment Co., Inc., Detroit, Mich.

Filed Dec. 22, 1980, Ser. No. 218,997

Int. Cl.³ B67D *5/30*

U.S. Cl. 222—14 **11 Claims**



1. An air controlled liquid dispensing system comprising an air logic controller in combination with an air operated positive displacement metering pump;

said metering pump having a cylinder and a reciprocal piston therein for delivering a predetermined measured unit of liquid for each cycle of said piston;

a base plate;

a first pneumatic circuit in said controller including a four-way valve mounted on said base plate having a reciprocal valve element;

air pressure and exhaust conduits and a pair of cylinder conduits connected to said four-way valve and connected to a source of air under pressure and to opposite ends of said cylinder respectively, for alternately introducing and exhausting compressed air at a uniform pressure to said cylinder effecting a plurality of continuous pumping cycles of said piston;

a second pneumatic circuit in said controller including a pair of alternately closeable, normally open flow control valves on said base plate;

flexible conduits respectively interconnecting said flow control valves with said first circuit cylinder conduits and with opposite ends of said four-way valve for alternately and continuously moving its valve element from one control position to the other control position;

a third pneumatic circuit in said controller including a pair of pneumatic predetermining countdown digital counters respectively indicating "units remaining in tank" and

"units to be pumped", pre-set to any predetermined number;

additional circuits interconnecting said counters with said first and second pneumatic circuits, for metering and counting the number of cycles of said piston in said cylinder and automatically stopping the pumping action when a predetermined number of measured units is reached;

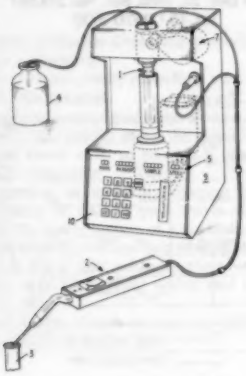
said third pneumatic circuit including a remote signal port connected into said third circuit and adapted for connection to a remotely activated pressure air signal for delivering air pressure to said second pneumatic circuit for initiating the pumping cycle.

4,475,666

AUTOMATED LIQUID DISPENSER CONTROL

Robert A. Bilbrey, Orinda; Bruce R. Koball, Emeryville, and John S. H. Loram, Berkeley, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 31, 1981, Ser. No. 297,956
Int. Cl.³ B67D *5/30*
U.S. Cl. 222—14 **5 Claims**



4. In an automated liquid dispenser having at least one metering syringe with a precision bored cylinder and a piston reciprocable within the cylinder, valve means for selectively connecting the syringe cylinder to one or more of a set of intake and delivery valve ports, improved servo controlled drive means for rotating the lead-screw and lead-screw nut relative to one another comprising

a motor rotating one or the other of the lead-screw and nut;

an encoder developing from the motor rotation a train of pulses each representative of an increment of piston travel with their repetition rate representative of piston velocity;

a driver for said motor;

a position counter accumulating the pulses in said encoder pulse train;

a microprocessor for polling the position counter and comparing its accumulated count to a predetermined memory-stored count representative of lengths of piston stroke, and for disabling the motor driver when the accumulated count in the position counter reaches the memory-stored count corresponding to a preselected stroke length; and

a valve position encoder that supplies a position signal to the microprocessor representative of the position of the intake and delivery valve ports

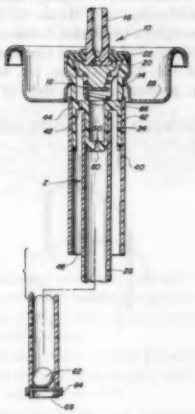
whereby the microprocessor in coordination with reciprocation of the syringe piston switches the valve position in a memory-stored sequence.

4,475,667

AEROSOL ASSEMBLY FOR SIGNALLING DEPLETION OF A PRESELECTED AMOUNT OF THE CONTAINER CONTENTS WHEN IN AN INVERTED POSITION

Peter Ori, Barrington, and Carleen Kreider, Buffalo Grove, both of Ill., assignors to Seaquist Valve Company, Cary, Ill.

Filed Jan. 6, 1983, Ser. No. 455,986
Int. Cl.³ B67D *5/32*; **B65D** *83/06*
U.S. Cl. 222—39 **10 Claims**



1. An aerosol container and aerosol valve assembly for automatically signalling, when used in an inverted position, that a pre-selected amount of the contents of said aerosol container has been discharged, said valve assembly comprising

a valve body defining a hollow interior and a base,

a hollow diptube operatively connected to said valve body interior and adapted to reach at its lower end to the bottom of said aerosol container,

a moveable valve stem for placing said valve body interior in communication with the exterior of said aerosol container, and

liquid level spray control means comprising a hollow tube operatively connected to said valve body and surrounding said diptube, said hollow tube defining opening means therein spaced below said valve body base, said opening means defining an open flow path from said container interior, between said diptube and said hollow tube, and to said valve body,

an opening defined by said valve body and being in flow communication with said open flow path, thereby to place said valve body interior and the interior of said container in flow communication,

said hollow tube extending downwardly from said valve body base, and said opening means being positioned below said base at least about 20% of the distance between said base and said diptube lower end and no more than a distance of about 80% of the distance between said base and said diptube lower end,

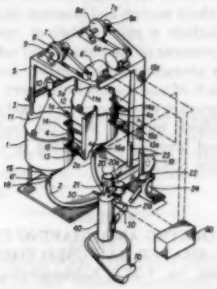
said opening means being in open flow communication with said valve body interior both when said aerosol container and said valve assembly are in an inverted position and in an upright position.

4,475,668

METERING FEEDER FOR LIQUID

Shigezo Kawakami, Kobe; Hiroshi Omura, Kakogawa, and Katsumi Ogawa, Amagasaki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 14, 1982, Ser. No. 378,330
Claims priority, application Japan, May 15, 1981, 56-73951
Int. Cl.³ B67D 5/08
U.S. Cl. 222—52 8 Claims



1. An apparatus for feeding a liquid at a constant rate comprising:

a liquid reservoir displaceably supported for up and down movement and which further comprises a liquid delivery orifice block disposed at a lower portion thereof;

a liquid dropping tank displaceably supported for up and down movement and which further comprises a liquid dropping chute and an intake nozzle communicating with the orifice block and disposed at a location lower than the location where the liquid dropping chute is attached to the liquid dropping tank such that said liquid flows from said liquid reservoir into said liquid dropping tank via said intake nozzle;

photoelectric droplet counting means provided facing a dropping portion of the dropping chute for generating signals; and

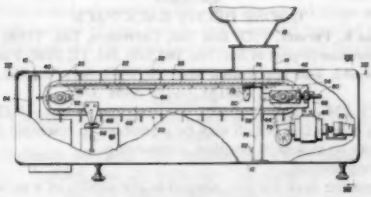
reservoir raising/lowering means and tank raising/lowering means for raising and lowering the liquid reservoir and dropping tank in accordance with generated signals received from the counting means such that said liquid is continuously fed at said constant rate.

4,475,669

NON-FLOODING BELT FEEDER

Richard C. Wahl, Essex Fells, N.J., assignor to Vibra-Screw, Inc., Totowa, N.J.

Filed Nov. 30, 1981, Ser. No. 325,815
Int. Cl.³ G01G 11/12
U.S. Cl. 222—55 12 Claims



1. Apparatus for feeding fluid-like particulate material, comprising:

a housing which includes a generally horizontal wall;

a weigh belt system, arranged within said housing, which weigh belt system includes a horizontally disposed endless belt mounted between spaced pulleys, and which endless belt includes an upper surface, spaced below and substantially parallel to said horizontal wall, and opposed first and second sides;

a variable speed motor coupled to one of said pulleys;

a plurality of spaced apart cleats connected to, and extending transversely from, the upper surface of said endless belt, each of which cleats includes opposed first and second sides, said endless belt spaced from the horizontal wall just sufficient to avoid frictional contact between the cleats and said horizontal wall such that the fluid-like particulate material is substantially prevented from overflowing said cleats and flowing along said endless belt;

wall means for the belt, arranged within said housing, adjacent and coextensive with the opposed first and second sides of said cleats for compartmentalizing the fluid-like particulate material such that the fluid-like particulate material is contained on the endless belt and is substantially prevented from entering the housing from said belt;

displacement means for measuring a displacement from the horizontal of at least a portion of said weigh belt system and for producing an output signal corresponding to said displacement; and

control means, responsive to said output signal, for regulating the speed of said motor.

4,475,670

FLUID DISPENSER

Christopher C. Rutter, 25200 Carlos Bee Blvd., Hayward, Calif. 94542

Filed Jul. 9, 1982, Ser. No. 396,621
Int. Cl.³ B67B 7/24
U.S. Cl. 222—83 8 Claims

1. In combination with a bulk fluid container comprising a flexible, sealed, fluid-containing bag, a fluid despenser including:

a tubular sleeve having a first end surface attached to the exterior surface of the fluid-containing bag, the longitudinal axis of said sleeve being substantially perpendicular to said bag exterior surface;

a tubular barrel slidably positioned within the bore of said tubular sleeve, said barrel having a first end adjacent the first end of said sleeve and said sealed bag surface, and a handle at the second end for manual rotation of said barrel within said sleeve;

valving means including a radial dispensing aperture through the wall of said tubular sleeve and through the wall of said tubular barrel and adjacent the second ends of said sleeve and barrel for controlling the flow of fluid from said fluid-containing bag through the bore of said barrel by the rotation of said barrel in said sleeve; and

opening means on the first end of said barrel for cutting a substantially circular opening with a diameter at least as large as that of said barrel first end in said sealed fluid-containing bag and within the area of said sleeve end surface by urging means for providing a combined rotational and inward longitudinal movement of said barrel within the bore of said sleeve for shearing said bag surface in a circular pattern between the exterior first end edge of said

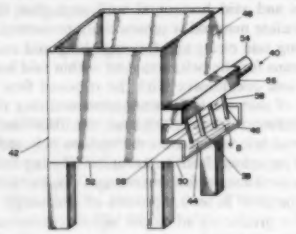
barrel and the interior first end edge at the bore of said sleeve.

4,475,671

LIP VIBRATOR UNLOADER

Franklin M. McCorkel, Leola, Pa., assignor to Aggregates Equipment, Inc., Leola, Pa.

Filed Nov. 12, 1981, Ser. No. 320,606
Int. Cl.³ B65G 65/40
U.S. Cl. 222—196 **1 Claim**



1. A bin unloading apparatus comprising:

a storage bin for solid material, with an opening in the bin permitting the stored material to flow out from under the material in the bin to a limited extent, so that a stationary sloping pile of material forms outside the opening when support for the pile exists, without any of the weight of the material in the bin upon the pile;

a structurally supported shelf located outside the storage bin, in close proximity to the opening in the bin, so that a pile of material flowing from the bin rests upon and is supported by the shelf without any of the weight of the material within the bin supported by the shelf; and

vibrating means mechanically isolated from the storage bin and its contents but mechanically coupled to and vibrating a pile of material resting upon the shelf;

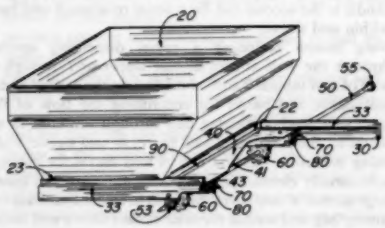
wherein the shelf is constructed as an extension of the bin bottom and the vibrating means comprises at least one rod, attached to and activated by a vibration generator, with one end of each rod located in close proximity to the top of the shelf edge, so that one end of each rod is buried in any material resting on the shelf.

4,475,672

HOPPER DISCHARGE DEVICE

Jerald M. Whitehead, Idaho City Stage Rte., Idaho City, Id. 83631

Filed Jul. 6, 1982, Ser. No. 395,129
Int. Cl.³ B60P 1/56
U.S. Cl. 222—561 **7 Claims**



1. A hopper discharge device comprising:

a hopper having framework defining a discharge opening;

a door support secured to the framework;

a door slidably mounted on said door support for opening or closing the discharge opening of said hopper, said door provided said channel members carrying a roller assembly, said roller assembly including a plurality of evenly spaced and longitudinally aligned rollers, wherein each of said channel members is substantially inverted U-shaped in cross-section and wherein each of said channel members include a pair of opposing horizontally extending legs defining a longitudinal slotted opening operable to receive a sprocket wheel, said legs operable to support links of said roller chain section and wherein each of said channel members include a pair of shelves operable to control upward movement of the links of said roller chain section;

a horizontally extending shaft rotatably mounted outwardly adjacent each of said channel members; and

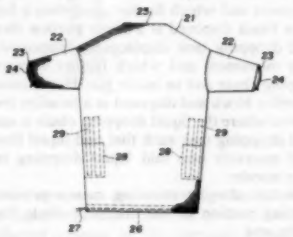
at least one sprocket wheel secured to said shaft, each of said sprocket wheels meshing with the respective rollers of each channel member for opening or closing said door upon rotation of said shaft.

4,475,673

METHOD OF DRYING AND SHAPING CLOTHING AND BODY-SHAPED BAG USED THEREFOR

Hiromichi Ochiai, No. 1-28-5, Kakinokizaka, Meguro-ku, Tokyo, 152, Japan

Filed Jun. 1, 1982, Ser. No. 384,103
Int. Cl.³ D06F 71/18, 71/40
U.S. Cl. 223—70 **7 Claims**



4. A body-shaped bag comprising:

a bag body formed of grey of hard air permeability of at least 2.5 cc/cm²/sec. with high heat resistance and strength and having a body, breast, shoulders and neck,

said neck and waist being integrally formed of right and left arms, the ends of said arms being sealed, the neck and the waist adapted to be sealed on a finishing machine to define an essentially fluid tight bag with limited fluid passage through the bag for heating the bag and placing the bag under tension.

4,475,674

GOOSE DECOY BACK PACK

Thomas E. Farmer, P.O. Box 748, Galveston, Tex. 77550

Continuation-in-part of Ser. No. 168,936, Jul. 11, 1980, Pat. No. 4,334,643. This application Mar. 26, 1982, Ser. No. 362,229
Int. Cl.³ A01M 31/06; A45F 3/04
U.S. Cl. 224—153 **7 Claims**

7. A decoy unit which may be assembled to resemble a bird and may be staked in position, comprising

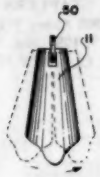
a body section,

a separate neck section, shaped in the profile of a neck and head of a bird, joined to a stake section,

said stake section terminating in a pointed tip, with

mutually engageable means in said body section and said neck section of a shape to suspend the body section from the neck section in the assembled mode when said neck section is staked into ground, in which

said mutually engageable means is shaped to permit sidewards motion of the said body section relative to the longitudinal axis of said body section with respect to the said neck section in response to wind, in the assembled



position, when the said neck section is staked into ground so that the action of wind upon an assembled unit that is staked in position is to cause a lateral horizontal motion of the body section so as to simulate life-like waddling motion of a bird.

4,475,675

PROTECTIVE PAD FOR GUN HOLSTER

Frank N. Miles, P.O. Box 160003, Sacramento, Calif. 95816

Filed Sep. 30, 1982, Ser. No. 430,715

Int. Cl.³ F41C *33/02*

U.S. Cl. 224—191 **5 Claims**

1. A holster for a handgun with a non-permeable back surface comprising in combination:

a downwardly tapered pouch with an opening on a top portion thereof to receive a handgun,

a laminate layer back surface on said pouch to prevent the permeation of moisture into said pouch through said back surface,

a flap extending upwardly from said laminate behind of said pouch adapted t~ provide an upwardly extending tab to fasten said pouch in a desired position, wherein said laminate layer back surface includes a first layer of cloth affixed to and substantially the same size as and shape as said back surface of said pouch, and a second layer of teflon affixed to and the same size and shape as said first layer.

4,475,676

EASY CARRY-EASY ACCESS GOLF MARKER AND TEE CADDY

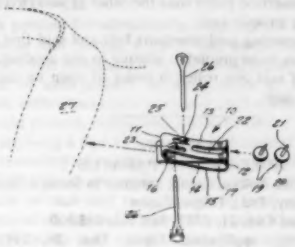
Cecil D. Smith, 69 Carla Way, Broomfield, Colo. 80020

Filed Apr. 27, 1983, Ser. No. 489,018

Int. Cl.³ A45F *5/00*; **A63B** *57/00*

U.S. Cl. 224—247 **1 Claim**

1. A caddy for carrying a plurality of golf ball markers and a plurality of golf ball tees, comprising a flattened, generally "S"-shaped clip formed from a single strip of resilient material, and including three generally flat jaws connected together by two "U"-shaped bends between their connecting ends, said jaws comprising a center jaw located between a pair of end jaws; a mouth formed at each opposite end of said clip, each said mouth being formed between a terminal end of one said end jaw and one said "U"-shaped bend, each said mouth being widened by said terminal end being outwardly rounded, one said mouth serving to receive a supporting object for said clip, while the other said mouth receives said golf ball markers; a slot on one said end jaws extending from said terminal edge



thereof, and communicating with said mouth for said slot receiving a pin of each said marker when said mouth receives a wide head thereof for being clamped between the last said end jaw and said center jaw; and a plurality of tongues struck out within a central portion of the last said end jaw, each said tongue having a semicircular, rolled-up bend at its terminal end, which bulges outwardly beyond an outer side of said end jaw for receiving and frictionally holding a golf tee between said rolled-up bend and said jaw outer side.

4,475,677

TRANSPORT APPARATUS FOR CONVEYING A PERFORATED RECORDING MEDIUM TO A PLATEN OR THE LIKE

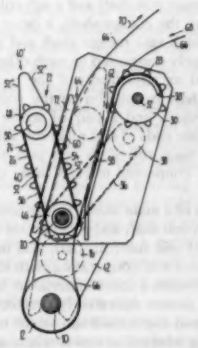
Albert Rutishauser, Rütihofstrasse 40, 8713 Uerikon, Switzerland

Filed Apr. 11, 1983, Ser. No. 483,651

Claims priority, application Switzerland, Apr. 20, 1982, 2380/82

Int. Cl.³ G03B *1/30*

U.S. Cl. 226—74 **9 Claims**



1. A transport apparatus for conveying a perforated recording medium to a platen, comprising:

a driveable endless transport belt forming an infeed run and provided with entrainment prongs;

two rollers about which said transport belt is trained;

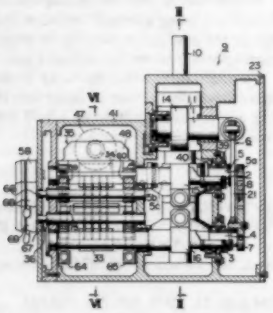
a first guide surface;
a first conveying gap bounded by said infeed run and said first guide surface;
an insertion roller positioned in a fixed reference position with respect to said first conveying gap and forwardly thereof at a side of said first guide surface;
said insertion roller being provided with prongs and being driveable at a circumferential speed which is essentially in synchronism with said transport belt;
one of said two rollers being positioned at a greater distance from said insertion roller than the other of said two rollers and having an axis; and
means for mounting said transport belt and said first guide surface so as to be pivotable relative to one another about said axis of said one roller in order to open up said first conveying gap.

4,475,678

ROLL FEED APPARATUS

Heizaburou Katoh, Tokyo, Japan, assignor to Sankyo Manufacturing Company, Ltd., Tokyo, Japan

Filed Oct. 21, 1982, Ser. No. 435,800
Claims priority, application Japan, Oct. 29, 1981, 56-163861[U]
Int. Cl.³ B65H *17/26*
U.S. Cl. 226—143 **6 Claims**



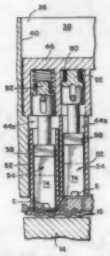
1. A roll feed apparatus comprising:
an intermittent driving device including a rocker shaft, a roll release shaft and a brake operation shaft which are adapted to make rocking rotation independently of one another, a main roll shaft and a sub-roll shaft extending in parallel with the rocker shaft, a drive connection device through which said rocker shaft and said main roll shaft are operatively connected to each other in such a manner as to permit an adjustment of the rocking angle of said main roll shaft in relation to the rocking angle of said oscillation shaft, and a pair of sector gears attached to respective one ends of said main roll shaft and said sub-roll shaft, said main roll shaft and said sub-roll shaft being operatively connected to each other through said sector gears;
a combination of a main sector roll attached to the other end of said main roll shaft and a sub-sector roll attached to the other end of said sub-roll shaft, said main sector roll and said sub-sector roll cooperating with each other in clamping therebetween a sheet material to feed the same;
a roll release device operatively connected to said roll release shaft and also to said sub-sector roll, said roll release device being adapted to move, when said rolls are rotated in the directions reverse to the feeding directions, said sub-sector roll away from said main roll thereby to release said sheet material from the clamping force; and
a braking device operatively connected to said brake operation shaft and adapted to make, when said rolls are rotated in the directions reverse to the feeding directions, engagement with said sheet material thereby to fix said sheet material against movement.

4,475,679

MULTI-STAPLE CARTRIDGE FOR SURGICAL STAPLERS

George J. Fleury, Jr., 1005 Abbey Way, McLean, Va. 22101

Filed Aug. 7, 1981, Ser. No. 291,086
Int. Cl.³ A61B *17/04*
U.S. Cl. 227—19 **15 Claims**



1. In a surgical stapler having an anvil for clinching a plurality of staples simultaneously, the improvement comprising:
means defining a plurality of staple retaining units, each of said units comprising an independently movable staple carrier having an end surface facing in the direction of and movable toward said anvil, and a staple driving head movable relative to said carrier; and
means for effecting simultaneous staple driving operation of said units to cause the carrier end surface of each of said units to move toward said anvil followed by movement of the staple driving head relative to the carrier of each unit, respectively;
said end surface having an area larger than the area to which the force of said driving head is applied to a staple, thereby to impede movement of said carrier under a pressure imposed by said end surface on tissue overlying said anvil, which pressure is lower than the driving pressure of said driving head against a staple.

4,475,680

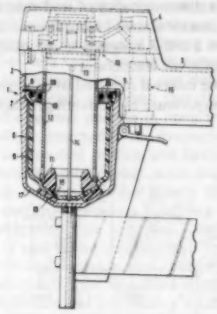
DRIVING APPARATUS FOR FASTENER ELEMENTS

Gerhard Farian, Grossbettlingen, Fed. Rep. of Germany, assignor to Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

PCT No. PCT/DE81/00054, § 371 Date Nov. 23, 1981, § 102(e) Date Nov. 23, 1981, PCT Pub. No. WO81/02992, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 2, 1981, Ser. No. 328,595
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014535
Int. Cl.³ B25C *1/04*
U.S. Cl. 227—130 **5 Claims**

1. An apparatus for driving fastener elements, comprising housing means including an outer housing member (2) having an inwardly facing shoulder, a driving cylinder (12) centrally located inside said outer housing member, a driving piston (13) displaceably supported in said driving cylinder, impact buffer means (11), said driving cylinder having an impact facing end, said impact buffer means being arranged at said impact facing end of said driving cylinder, pot shaped insert means (6) made of damping material and having an outwardly reaching flange, said insert means (6) being operatively arranged inside said outer housing member (2) between said driving cylinder (12) and said outer housing member with said flange (7) resting against said shoulder for holding said insert means (6) of damping material in said outer housing member in a stationary posi-

tion, said impact buffer means (11) resting on a bottom of said pot shaped insert means (6), for effectively damping any impacting noise by the cooperation between said impact buffer (11) providing mechanical impact damping and said insert means (6) of damping material providing noise dissipation.

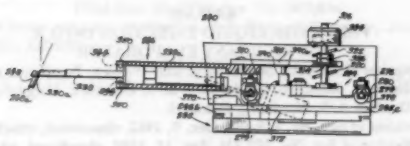


4,475,681

BONDER APPARATUS

Lloyd D. Ingle, Valley Center, Calif., assignor to The Micromanipulator Co., Inc., Carson City, Nev.

Filed May 24, 1982, Ser. No. 381,174
Int. Cl.³ B23K *37/02*
U.S. Cl. 228—4.5 5 Claims



1. A small movable bonder apparatus for releasable attachment to a support surface associated with a microscope to bond a conductive wire to a conductive element on a workpiece,

said apparatus comprising:

a base having a substantially horizontal lower side for placement of the apparatus at various locations on the support surface and relative to the microscope,

a support arm pivotally mounted on the base for swinging movement between upper release position and a lowered bonding position,

a bonding tool on the outer free end of the pivotally mounted support arm for bonding the wire to the conductive element,

manually operable means to actuate the support arm and to swing the arm and the bonding tool to a touchdown position in which the bonding tool touches the wire to the conductive element,

electrically operated actuator means to provide an increasing contact force between the wire and the conductive element as the bonding tool bonds the wire to the conductive element,

wire supply means on the base for feeding the conductive wire to the bonding tool, and

means for releasable attaching the base to the support surface to hold the base at a predetermined location with respect to the line of sight of the microscope during the bonding operation,

said releasable means allowing movement of the base to various locations on the support surface.

4,475,682

PROCESS FOR REDUCING SERIES RESISTANCE OF SOLAR CELL METAL CONTACT SYSTEMS WITH A SOLDERING FLUX ETCHANT

R. T. Coyle, Lakewood, and Joy M. Barrett, Eldorado Springs, both of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 4, 1982, Ser. No. 374,675
Int. Cl.³ B23K *1/20*
U.S. Cl. 228—123 11 Claims

1. A process for substantially reducing the series resistance of a solar cell having a thick film metal contact assembly thereon while simultaneously removing metal oxides from the surface of said contact assembly prior to applying solder thereon without a need to etch said oxides with a hydrofluoric acid, said process comprising the steps of:

(a) applying a flux to said solar cell contact assembly;

(b) removing said series resistance associated with said thick film contact assembly without using said hydrofluoric acid to etch said metal oxides by heating said cell for a period of time sufficient to cause said flux to substantially etch away said metal oxides from said surface of said assembly during said heating.

4,475,683

RESEALABLE CLOSURE ASSEMBLY FOR A CONTAINER

Kuno J. Vogt, 4250 1/2 Fairmount Ave., San Diego, Calif. 92105

Filed Sep. 30, 1982, Ser. No. 429,101
Int. Cl.³ B65D *39/16*
U.S. Cl. 229—7 R 8 Claims

1. A container comprising:

a tubular shaped member that forms the body of a container;

a bottom wall closing the lower end of the tubular shaped member;

a neck portion having its lower edge connected to the top edge of said tubular shaped member, said neck portion being wider at its bottom than at its top;

a resealable closure assembly connected to the top end of said neck portion comprising:

a tubular pouring spout having a fold edge formed along its lower edge where it is connected to the top edge of said neck portion, said pouring spout being laterally collapsible upon itself and then foldable downwardly about said folding edge, said pouring spout having at least four longitudinally extending fold edges that aid in collapsing said pouring spout, two of said longitudinally extending fold edges having a protrusion extending from them adjacent their lower ends (that function to aid in capturing said means for securing the pouring spout in a collapsed state); and

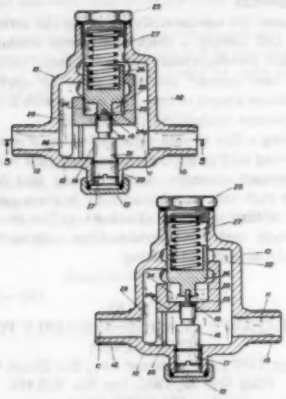
means for securing the pouring spout in a collapsed state comprising a key member in the form of a substantially flat strip of plastic material, said member having a transversely extending slot through which said spout can be inserted when in its collapsed state, said protrusions on two of said longitudinally extending fold edges function to aid in capturing said means for securing the pouring spout in a collapsed state.

4,475,684

MIXING VALVE

Ronald G. Garlick, Seven Hills North, and Roman Golman, Killarney Heights, both of Australia, assignors to Robertshaw Controls (Australia) Pty. Limited, Pendle Hill, Australia

Filed Jul. 22, 1983, Ser. No. 516,691
Claims priority, application Australia, Aug. 2, 1982, PF5168
Int. Cl.³ G05D *23/13*
U.S. Cl. 236—12.14 **10 Claims**



2. A mixing valve comprising a first fluid flow passage which is connectable in a high temperature fluid supply line, a thermostat element located in or adjacent the first passage and contactable thermally by fluid passing through the first passage, a second fluid flow passage which is connectable with a supply of low temperature fluid and which communicates with the first passage upstream of the thermostat element, a regulator valve element located in circuit with the second passage and actuatable by the thermostat element to regulate flow of low temperature fluid to the first passage from the second passage, a third fluid flow passage which is connectable with the low temperature fluid supply and which communicates with the first passage, and valve means located in circuit with the third passage, the valve means being arranged to admit fluid to the first passage from the third passage if flow of fluid to the first passage from the second passage is restricted to a predetermined extent.

4,475,685

CONTROL SYSTEM FOR EFFICIENT INTERMITTENT OPERATION OF BUILDING HVAC EQUIPMENT

Philip B. Grimado, Denville; Vernon E. Holt, Mendham, and Nicholas Osifchin, Kinnelon, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 7, 1983, Ser. No. 472,935
Int. Cl.³ F23N *5/20*
U.S. Cl. 236—46 R **15 Claims**

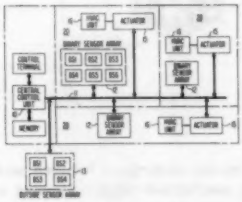
1. A method of determining optimum start/stop times for an air handling unit in order to achieve a predetermined limit temperature within a building space controlled by the air handling unit at some preassigned time comprising the steps of:

sensing an outside temperature outside a building encompassing the building space from an outside array of binary temperature sensors covering a range of outside temperatures and resolving it into quantum levels and assigning a unique integer J to a particular quantum leve of the outside temperature sensed

sensing an inside building space temperature within the building space controlled by the air handling unit from an inside array of binary temperature sensors covering a range of inside temperatures and resolving it into quantum levels and assigning a unique integer I to a particular quantum level of the inside building space temperature sensed

storing in a memory an array of start/stop parameter elements having a dimensionality of lead-time and having an individual parameter element associated with each pair of unique integers I and J assigned to the quantum levels of inside and outside air temperature

determining a time interval required to achieve the predetermined limit temperature by activating/deactivating an air



handling unit by accessing a start/stop parameter element associated with an integer pair of integer I representing the present building space air temperature quantum level and integer J representing the present quantum level of outside air temperature, and

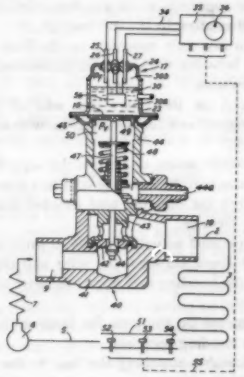
computing if a time interval between present time and preassigned time equals the time interval to achieve the predetermined limit temperature and activating/deactivating the air handling unit when they are substantially equal.

4,475,686

VALVE FOR LIQUID INJECTION INTO A REFRIGERANT EVAPORATOR

Zbigniew R. Huelle, Sonderborg; Leif Nielsen, Nordborg, and Jakob S. Jakobsen, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 448,188, Dec. 9, 1982, abandoned, which is a division of Ser. No. 272,731, Jun. 11, 1981, abandoned, which is a continuation of Ser. No. 956,859, Nov. 1, 1978, abandoned. This application Nov. 21, 1983, Ser. No. 553,799
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749250
Int. Cl.³ F25B *41/04*; G05D *23/00*; F16K *31/00*
U.S. Cl. 236—68 C **2 Claims**



1. A valve assembly for a refrigerator plant having an evaporator that includes an outlet tube, comprising a valve unit that includes a lower first portion having an inlet first chamber, an

outlet second chamber and an opening between the inlet and outlet chambers, closing means for closing said opening, said closing means including a nozzle insert having a valve seat that is in said lower portion, a closure member abuttable against the valve seat for blocking fluid flow between the inlet and outlet chambers, means for biasing said closing means, including the closure member, in a valve closing direction, a second portion joined to the lower portion that in part defines a third chamber with the closing means extending therethrough, a connector mounted by the second portion to open to the third chamber for being fluidly connected to the evaporator, chamber means mounted on said second portion and having a moveable wall portion in abutting relationship with said closing means, a filling medium for the chamber means that has a liquid and vapor phase exerting a pressure P_f biasing said wall portion in a valve opening direction, a control unit for controlling the temperature of said filling medium, and heating and feedback temperature sensing means in said chamber means that is connected to said control unit, said third chamber opening to said movable wall portion and said biasing means including resilient means for biasing said closure member against said movable wall portion, and a pair of sensor means connected to said control unit for detecting whether or not the refrigerant in the evaporator outlet tube is superheated and sensor means connected to said control unit for determining the temperature of the refrigerant in said evaporator outlet tube.

4,475,687

DEVICE FOR HEATING AND VENTILATING LARGE-AREA VEHICLES

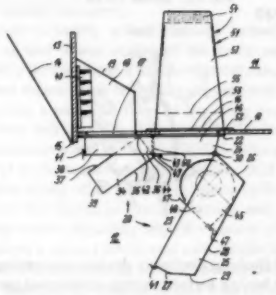
Joachim Schulz, Mudau/Odenwald, and Werner Thelen, Buchen, both of Fed. Rep. of Germany, assignors to Aurora Konrad G. Schulz GmbH & Co., Mudau/Odenwald, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,856

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1982, 3225089

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 A **13 Claims**



1. A device for heating and ventilating large-area vehicles which have a passenger area, a floor, and a distribution passage disposed above said floor and extending in the longitudinal direction of said passenger area; said device comprising:

a housing, which is provided with air entry and air exit openings, is adapted to be arranged beneath said floor of said passenger area, and is provided with an open base adapted to face said floor, a bottom remote from said open base, two side walls, and two end walls which converge at least partially toward said bottom of said housing; said housing being of two-part construction, with a division, which is substantially parallel to said open base, dividing said housing into a frame part and a trough part; said frame part of said housing being of rectangular construction, with said open base of said housing being part of said base part, and with said bottom of said housing being part of said trough part; a portion of said open base of said housing forming said air entry opening, which is for recirculated air from said passenger area;

at least one blower, which is accommodated in said housing and has a delivery pipe adapted to discharge an air flow;

at least one heat exchanger suspended in said frame part of said housing in such a way that it protrudes from said frame part and beyond said division away from said open base; said heat exchanger having an inlet side for receiving said air flow discharged from said blower, and an outlet side which communicates with said air exit opening of said housing; that portion of said open base of said housing which lies in the vertical projection of said outlet side of said heat exchanger forms said air exit opening, which communicates, via a first aperture in said floor, with said distribution passage; said heat exchanger being arranged in such a way that on its inlet side it has an edge adjacent to said division;

a retaining fitting provided in said trough part of said housing for receiving said blower, which, in the region of said recirculated air entry opening of said open base of said housing, extends into said frame part of said housing; said blower and said heat exchanger being arranged in such a way that said air flow discharged from said blower proceeds at a relatively acute angle relative to said open base of said housing and obliquely strikes said inlet side of said heat exchanger; the axis of through-flow of said heat exchanger being at right angles to said inlet and outlet sides of said heat exchanger, and being inclined relative to said open base of said housing at an acute angle which is greater than the acute angle of said air flow discharging from said blower; and

a seal provided between said heat exchanger and said delivery pipe of said blower over the entire width of said housing in the region of said edge of said heat exchanger which lies on the inlet side thereof adjacent to said division.

4,475,688

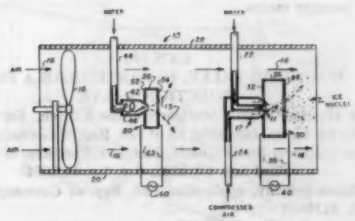
ARTIFICIAL SNOW MAKING

James L. Hodges, 3 Hilltop Ave., Vernon, Conn. 06095

Filed Sep. 27, 1982, Ser. No. 423,674

Int. Cl.³ F25C *3/04*

U.S. Cl. 239—2 S **8 Claims**



1. A method for making snow comprising:

a. expanding a stream of compressed air and liquid water in a nucleating zone to form water droplets which upon cooling during the expandion step form ice nuclei particles therein;

b. establishing an electrostatic field about said nucleating zone and subjecting the air and water stream expanding in said nucleating zone to said electrostatic field during the expansion step thereby increasing the number of ice nuclei formed; and

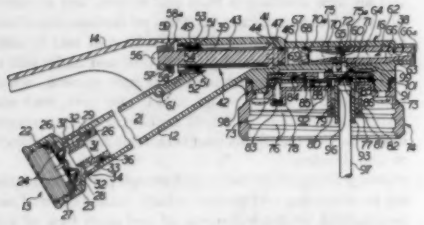
c. subsequent to the expansion step, discharging the ice nuclei particle containing stream into the atmosphere.

4,475,689

VARIABLE DILUTION RATIO HOSE-END SPRAYER

Harry L. Hauger, and Glenn I. Beal, both of Somerset, Pa., assignors to R. M. Smith, Inc., Somerset, Pa.

Filed Dec. 9, 1982, Ser. No. 448,387
Int. Cl.³ B05B 7/30
U.S. Cl. 239—318 11 Claims



1. In a multiple dilution ratio hose-end sprayer having a mixing head containing a mixing chamber which includes a sprayer discharge outlet, a means for connecting a water source to said mixing head for supplying water to said mixing chamber, a means for securing a fluid container to said mixing head, passage means for conveying fluid from said container to said chamber and control means for varying the flow of fluid from said container to said chamber, the improvement therein comprising:

a. said mixing chamber being in fluid communication with a fluid inlet means smaller than the sprayer discharge outlet;

b. a rotable control dial having a plurality of orifices and associated cavities, said dial being rotably mounted adjacent said mixing head, said orifices and cavities being positioned on circles concentric with the axis of the dial which intersects the axis of fluid passage means for fluid communication between a selected orifice and said passage means, said cavities being positioned on the surface of the dial adjacent to the mixing head and in communication with said associated orifice;

c. retainer means for biasing said rotatable dial against said mixing means and indexing a selected orifice in communication with said passage means;

d. retainer biasing means; and

e. an intersecting channel extending from ahead of said mixing chamber to communicate with the cavity of the associated orifice indexed in communication with said passage means.

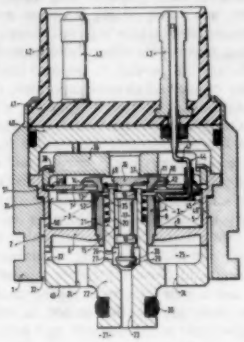
4,475,690

MAGNETIC VALVE, IN PARTICULAR A FUEL INJECTION VALVE

Asta Hascher-Reichl, Stuttgart; Hans Kubach, Korntal, and Werner Gross, Ismaning, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,974
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139669
Int. Cl.³ B05B 1/30; F16K 31/02
U.S. Cl. 239—585 19 Claims

1. A magnetic valve for a fuel injection system of an internal combustion engine, said valve having a valve housing, a conductor coil mounted on a core of ferromagnetic material in said housing, an armature carrying a valve body cooperating with a valve seat, said armature including a plate-like element and a strut, said core including an inner cylinder and an outer cylinder, said cylinders being disposed concentrically with respect to one another and between which said conductor coil is disposed, each of said cylinders having end faces connected magnetically with one another, at least one of said end faces being connected via a yoke and said other end face being partially covered by a circular-annular magnetically conductive plate means connected in a magnetically conductive manner with said outer cylinder, said strut being located opposite said core inner cylinder and forming a first air gap between said armature and said core, and said plate-like element having margin



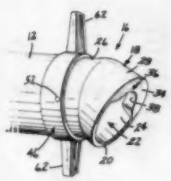
means overlapping said circular-annular plate and forming a second air gap between said armature and said core, the thickness of said second air gap being reduced simultaneously with reduction of the first air gap upon attraction of the armature toward said magnetic core.

4,475,691

FLUID FLOW DIRECTIONAL DEVICE

Curtis M. Hintz, Cottage Grove, Minn., assignor to South Park Corporation, South St. Paul, Minn.

Filed Nov. 24, 1982, Ser. No. 444,082
Int. Cl.³ B05B 15/08
U.S. Cl. 239—587 2 Claims



1. A hydrant flushing discharge device, comprising:

(a) a member having formed therein an internal passageway having a first portion aligned along a first axis and a second portion aligned along a second axis intersecting said first axis at an acute angle, said member being matable with the hydrant with a discharge port of the hydrant in fluid communication with said internal passageway;

(b) a diffusion block carried by said member and positioned within said internal passageway at a sidewall thereof on a side toward a direction in which said second axis diverges from said first axis, and proximate an intersection of said first and second portions, to cause turbulence of water passing through said internal passageway; and

(c) a bead built up in said internal passageway at a distal end of said second portion on a side of said sidewall away from a direction in which said second axis diverges from said first axis;

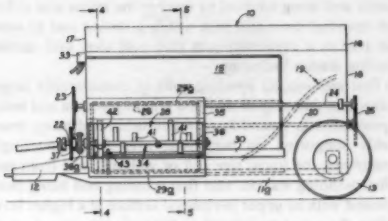
(d) wherein water passing through said internal passageway can be both diffused and redirected.

4,475,692

SPREADER VEHICLE

Charles E. Walley, Cotton Abbotts, Waverton, Chester, England

Filed Jul. 22, 1981, Ser. No. 285,816
Claims priority, application United Kingdom, Jul. 30, 1980, 8024892; Jun. 26, 1981, 8119805
Int. Cl.³ A01C 23/00
U.S. Cl. 239—662 7 Claims



1. A spreader vehicle including:

a body for containing and transporting a bulk load of material of a consistency which may range from liquid to non-flowable semi-solid, said body having wall structure provided with discharge opening means in a lower region for controlled passage of material from the body;

closure means selectively displaceable to determine a variable effective open area of the discharge opening means through which area the material may pass from the body during spreading, and to completely close said discharge opening means for containment of the material within the body during transport;

feed means including a feed element extending longitudinally of said lower region of the body and operatively rotatably driven about a first horizontal axis, formations of the feed means being shaped to progressively sweep material across a part of a floor of the body extending below said axis and laterally adjacent the discharge opening means towards and through said open area during spreading and at the same time progressively shift material from said bulk along other parts of the floor surface of the body towards the discharge opening means; and

spreading means including impeller means driven for rotation about a second horizontal axis parallel to the first axis outside and in proximity to said opening means, and in the same direction of rotation as said feed element to receive and act on material passed through said opening means; characterized by

(a) said wall structure of the body including front and rear end walls each extending continuously to the full effective height of the body and between which the whole effective length of the feed means is located;

(b) the discharge opening means being defined by a lower side wall of the body forward of the rear end wall; and

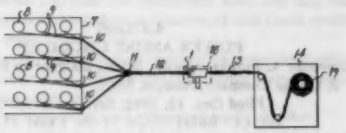
(c) a housing having an opening along its outer side, said housing extending laterally of the body from the exterior of the discharge opening means to enclose the ends of the spreading means and having a floor extending below the spreading means whereby the material passed through the discharge opening means is carried below the second axis and discharged laterally of the body forward of said rear end wall and wholly to one side of the path of travel of the vehicle in use.

4,475,693

METHOD OF PRODUCING GLASS FIBER PRODUCT

Alexander Munro, Atherton, and Lester Entwisle, Hindley Green, both of England, assignors to TBA Industrial Products Limited, Manchester, England

Continuation-in-part of Ser. No. 275,384, Jun. 19, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 424,305
Claims priority, application United Kingdom, Jun. 15, 1981, 8118358
Int. Cl.³ B65H 54/00, 55/04
U.S. Cl. 242—42 3 Claims



1. A method of producing an essentially catenary-free, untwisted, continuous multifilament glass fiber roving, the method comprising the successive steps of:

(1) withdrawing individual continuous multifilament glass fiber strands from each of a plurality of creel packages;

(2) assembling them side-by-side to form a single roving of linear density 300 to 10,000 tex;

(3) passing said roving at a rate of from 150 to 300 meters/minute without positive overfeed, whereby there is no bulking thereof, through a relatively confined air treatment passageway;

(4) introducing air into said passageway generally normally with respect to the direction of passage of the roving at 0.5 to 1.5 cubic meters/minute under a pessure of from 400 to 600 KN/meter^2, followed by,

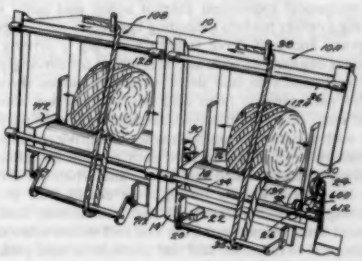
(5) winding the thus treated roving into a package.

4,475,694

AUTOMATIC TENSION CONTROLLER BALL CREEL

D. C. Reece, Clarksville, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Oct. 29, 1982, Ser. No. 437,556
Int. Cl.³ B65H 59/00, 75/00
U.S. Cl. 242—54 R 9 Claims



4. Apparatus for controlling the tension of a strand communicating between a utilization device and a wound collection, said apparatus comprising:

first and second rotatable shafts disposed substantially in parallel, separated by a predetermined distance;

means for effecting rotation of said first and second shafts, at a relatively fast speed and a relative slow speed, respectively;

first and second rollers coaxially disposed with said shafts and rotatably mounted thereon, said rollers being adapted

to receive said wound collection thereon and impart rotational motion thereto;

means for coupling said rollers such that they rotate at substantially identical speeds;

clutch means, responsive to a control signal applied thereto, for selectively coupling, in a mutually exclusive manner, said first roller to said first shaft to rotate said rollers at said fast speed or couple said second roller to said second shaft to rotate said rollers at said slow speed; and

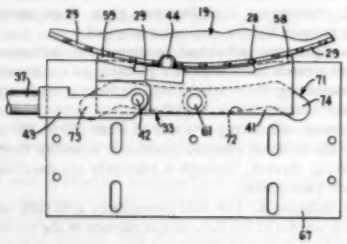
switch means, responsive to tension in said strand, for controllably generating said control signals to said clutch means.

4,475,695

POWER ASSIST UNCOILER

Lawrence A. Franks, Sturgis, Mich., assignor to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Filed Dec. 13, 1982, Ser. No. 449,092
Int. Cl.³ B65H *51/24, 51/28;* **F16H** *25/18*
U.S. Cl. 242—54 R **13 Claims**



1. In a coil stand having a frame, shaft means mounted on said frame, and reel means supported on said shaft means and being rotatable about the axis thereof, said reel means including a central core and pair of end flanges which project radially outwardly from said core adjacent the opposite ends thereof, whereby an elongated flexible element can be coiled about and supported on said reel means, the improvement comprising a reciprocal drive structure which is cyclically movable back-and-forth along a selected path, said path being free of loops, guide means for movably guidably supporting said reciprocal drive structure for reciprocal movement along said path, and power means connected to said drive structure for effecting the reciprocal movement thereof along said path, said path having a center portion extending between a pair of spaced end portions, and said drive structure having a driving element which is engageable with said reel means for drivingly rotating said reel means as said drive structure moves through said center path portion from said one end portion toward said other end portion, said drive structure being drivingly engageable with said reel means both when the drive structure moves forwardly through the center path portion for effecting unwinding rotation of said reel means and when the drive structure moves rearwardly through the center path portion for effecting opposite rotation of said reel means, said driving element being disengaged from said reel means when said drive structure is in either of said end portions of said path.

4,475,696

TWO STATION WINDING APPARATUS

Steven W. Birch, Monroe, and George E. Barnes, Pineville, both of N.C., assignors to Birch Brothers Southern Incorporated, Waxhaw, N.C.

Filed Sep. 29, 1982, Ser. No. 427,453
Int. Cl.³ B65H *17/08, 25/04*
U.S. Cl. 242—66 **10 Claims**

1. An apparatus for successively winding rolls of web material onto elongate cores, said apparatus comprising

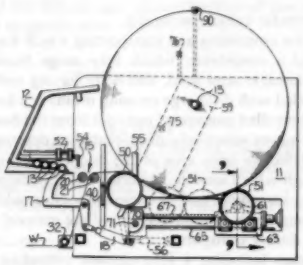
(a) a first winding station for winding a roll of web material on a core and to a predetermined initial size, said first winding station including

(1) first and second winding rolls positioned in spaced-apart relationship and being rotatably supported for supporting the initial size roll of web material between said first and second winding rolls,

(2) drive means for rotating said first and second rolls in the same direction and at different peripheral speeds to maintain a predetermined tension in the web material being wound on said initial size roll, and

(b) a second winding station spaced from said first winding station and being adapted to receive the initial size roll of web material from said first winding station and to wind said roll to a predetermined final roll size, said second winding station including

(1) first and second winding rolls of considerably larger size than said rolls of said first winding station and being positioned in spaced-apart relationship and being rotatably supported on horizontal axes for supportingly receiving the initial size roll of web material from said first winding station, said first winding roll being positioned with its upper peripheral surface at a higher level than the upper peripheral surface of said second winding roll, and said first winding roll being positioned between said second winding roll and said first winding



station so that said second winding roll is positioned further away from said first winding station than said first winding roll,

(2) drive means for rotating at least one of said winding rolls for continuing winding of the web material onto said roll until said roll increases in diameter to a predetermined final size,

(3) means supporting said second winding roll for movement of said second winding roll toward said first winding roll along a substantially horizontal plane and to an initial position with the space between said first and second winding rolls being less than the diameter of said second winding roll, and for movement of said second winding roll away from said first winding roll along a substantially horizontal plane and to a final position with the space between said first and second winding rolls being at least two times the diameter of said second winding roll, and

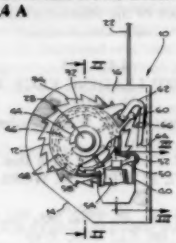
(4) means operatively associated with said second roll support means for moving said second winding roll from said initial position and away from said first winding roll to said final position along said substantially horizontal plane to thereby increase the spacing between said first and second rolls so as to accommodate the winding of the roll of web material to a predetermined final size.

4,475,697

INERTIA REEL USING MODULAR LOCKING MECHANISM

Manfred Wyder, Rowland Heights, Calif., assignor to American Safety Equipment Corporation, Troy, Mich.

Filed Mar. 11, 1983, Ser. No. 474,712
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **3 Claims**



3. An emergency locking safety belt retractor having a webbing storage reel, a locking ratchet turnable with said reel and engaged by a locking pawl to prevent webbing protraction relative said reel, a programming ratchet turnable with said reel, a programming pawl engageable with said programming ratchet and vehicle inertia sensor means for actuating said programming pawl into engagement with said programming ratchet in the event of an emergency condition to cause lock up of said locking pawl and locking ratchet in a programming manner wherein the improvement comprises

said programming pawl and vehicle inertia sensor means being mounted in a housing which in turn is shiftably mounted relative said programming ratchet and wherein said housing has a chamber enclosing said programming ratchet whereby said programming ratchet, programming pawl and vehicle inertia sensor means are protected by said housing from exterior contaminates.

4,475,698

APPARATUS FOR COILING A FLEXIBLE MEMBER

Jimmy Militello, Rte. 2, Box 2994, Plant City, Fla. 33566

Filed Mar. 4, 1982, Ser. No. 354,611
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—86 **2 Claims**

1. An apparatus for coiling a flexible member such as a hose, comprising in combination:

an elongated body member;

a coil mechanism located at the distal end of said elongated body member for coiling the flexible member upon rotation of said coil mechanism;

said coil mechanism comprising a first, a second and a third projection extending substantially parallel to one another with said first projection and said second projection being sufficiently spaced apart to permit the flexible member to be inserted therebetween and with said third projection being spaced rearwardly from said first projection to initiate coiling of the flexible member upon rotation of said coil mechanism;

means for rotating said coil mechanism comprising, in combination:

a crank mechanism located at the mid-portion of said elongated body member and

an endless flexible member interconnecting said crank mechanism and said coil mechanism such that said coil mechanism is rotated upon rotation of said crank mechanism; and

handle means for permitting an operator to grasp the apparatus and operate the same to coil the flexible member comprising, in combination:

a grip extending from said elongated body member,

a forearm cradle positioned at the proximal end of said elongated body member; and

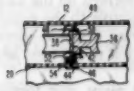
said grip member extending from said elongated body member being positioned relative to said forearm cradle to permit the forearm of the operator to be comfortably seated within said forearm cradle when the hand of the operator grips said grip.

4,475,699

LEADER DISPENSER

Larry A. Calvin, 907 Iowa, Belgrade, Mont. 59714

Filed Aug. 2, 1982, Ser. No. 404,623
Int. Cl.³ B65H *59/38*
U.S. Cl. 242—137.1 **7 Claims**



3. A dispenser for dispensing leader comprising:

a top open box housing portion having a top wall, a pair of opposed end walls and a pair of opposed side walls;

a bottom open box housing portion having a bottom wall, a pair of opposed end walls and a pair of opposed side walls;

hinge means for hingedly connecting the top and bottom housing portions along adjacent edges of corresponding end walls;

means for releasably connecting the top and bottom housing portions along adjacent edges of corresponding end walls opposite the end walls hingedly connected whereby the top housing and bottom housing portions being connected define an interior space;

a base panel mounted in the interior space to the top wall in spaced apart parallel relation, therewith, by supporting posts;

an axle mounted on the base panel;

a leader spool for holding leader being mounted on the axle;

the axle having a head portion with the leader spool being mounted between the head portion and the base panel and the head portion being dimensioned to prevent the leader spool from being removed from the axle;

a first washer mounted on the axle between the head portion of the axle and the leader spool;

a second washer mounted on the axle between the head portion of the axle and the leader spool;

resilient means for resiliently biasing the leader spool and the

first and second washers against the head portion of the axle;

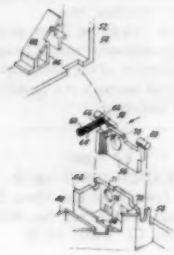
the leader on the leader spool being directed from the leader spool around a portion of a supporting post then between the first and second washers associated with the leader spool and then out of the interior space through a corresponding aperture provided in the side wall of the top housing portion.

4,475,700

TAPE CASSETTE DUST DOOR LATCH SPRING ASSEMBLY

Robert B. MacLeod, Jr., Kennebunkport; Vincent E. Landry, Saco, and Paul J. Gelardi, Cape Porpoise, all of Me., assignors to Shape Inc., Biddeford, Me.

Filed May 9, 1983, Ser. No. 493,021
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—197 **12 Claims**



1. A tape cassette dust door latch, comprising:

(a) a lock plate;

(b) a boss integrally formed on the lock plate and extending perpendicularly relative to the plane of the lock plate;

(c) a coil spring having first and second ends, wherein the first end is connected to the boss and the second end is a free end; and

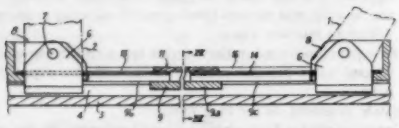
(d) first and second pivot pins formed on the lock plate extending in a plane parallel to the lock plate, wherein the boss extends perpendicularly from the first pivot pin.

4,475,701

DEVICE FOR PROTECTING AND COVERING A RAIL FOR FIXING THE SEATS OF A COMMERCIAL AIRCRAFT

Gérard Martin, Longpont-sur-Orge, France, assignor to Société anonyme dite: Tissmetal Lionel-Dupont, Lyons, France

Filed May 4, 1983, Ser. No. 491,417
Claims priority, application France, May 18, 1982, 82 08666
Int. Cl.³ B64D *11/06*
U.S. Cl. 244—118.6 **8 Claims**



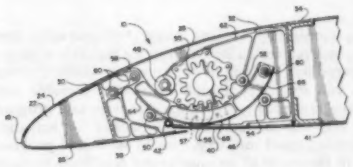
1. A device for protecting and covering a rail for fixing the seats of a commercial aircraft equipped with a device for automatically varying the pitch of the seats, said rails presenting, in its upper surface, a groove in which grip fastening members fast with the feet of the seats and preventing detachment thereof whilst allowing them to slide longitudinally, the feet of the seats being fast with bases connected by connecting laths, comprising a long upper rail cover, of width greater than that of the rail, totally covering the rail and in contact, by its longitudinal edges, with the floor carpet, this rail cover being fast with the seat connecting lath, and horizontal blades fast with each base of a foot extending longitudinally over a certain length under the rail cover, between the latter and the connecting lath, to form, with this rail cover, a telescopic assembly and thus to cover the whole of the rail between the rear foot of one seat and the front foot of the following seat.

4,475,702

VARIABLE CAMBER LEADING EDGE ASSEMBLY FOR AN AIRFOIL

James B. Cole, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01797, § 371 Date Dec. 28, 1982, § 102(e) Date Dec. 28, 1982, PCT Pub. No. WO84/02506, PCT Pub. Date Jul. 5, 1984
PCT Filed Dec. 28, 1982, Ser. No. 474,652
Int. Cl.³ B64C *3/48*
U.S. Cl. 244—214 **3 Claims**



1. A leading edge assembly for an airfoil having an upper surface, a lower surface, a leading edge and a trailing edge, said assembly comprising:

a. a main support structure for the airfoil;

b. a nose section at said leading edge;

c. an upper skin panel having a rear part connected to said structure, a forward part connected to said nose section, and an intermediate flexible panel portion extending between the rear part and the forward part;

d. actuating means operatively connected between said nose section and said support structure to move said nose section about a general center of rotation between a first upper position where the flexible panel portion has a lesser degree of curvature and said nose is more horizontally aligned, to a second lower position where the flexible panel portion has a greater degree of curvature and the nose section is aligned in a more downward slant, in a manner that curvature of the flexible panel portion increases with movement of the nose section toward its second position, said actuating means comprising a cam track connected to said nose section, and a cam track contact member connected to said support structure, said cam track having a lengthwise axis curved in a generally arcuate path about said general center of rotation, said cam track contact member and said cam track being operatively interconnected to be constrained to move relative to one another along a path aligned with the lengthwise axis;

e. said cam track having a forward end connected to said nose section, said cam track contact member having two contact portions contacting said cam track at two spaced locations along the lengthwise axis to restrain angular movement of the cam track relative to the cam track contact member;

f. drive means to move the cam track and the cam track engaging member relative to one another to move the nose section between its first and second positions;

g. said drive means comprising a rotatably mounted drive gear engaging said cam track at a drive location spaced from said two support locations and positioned intermediate said support locations;

h. said cam track having a forward cam section engaging a forward one of said contact portions in a manner to move along a path having a forward and upward slant, and a rear cam section engaging a rear one of said contact portions for travel along a path having an upward and rearward slant; and

i. the general center of rotation of said cam track being positioned at an upper part of said assembly between the forward and rear parts of said upper skin panel, the lengthwise axis of the forward and rear cam sections of said cam track deviating at least partially from a true circular arc, in a manner that said general center of rotation shifts during movement of the nose section between the first and second positions, whereby a proper aerodynamic contour of said upper skin panel can be obtained.

4,475,703

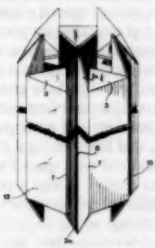
SPACER FOR LOADING PALLETS

Hans-Elov Nordgren, Ovanåker, 82800 Edsbyn, Sweden

Continuation of Ser. No. 294,516, Aug. 20, 1981,. This application Mar. 8, 1984, Ser. No. 585,637

Int. Cl.³ F16M *11/20*

U.S. Cl. 248—188.1 **4 Claims**



1. A spacer for loading pallets, comprising a tubular member, which has, at least at one end thereof, a number of securing tabs extending generally in axial direction and adapted to penetrate into and connect the tubular member to a deck-forming member of the loading pallet, and a number of support members extending at an angle to the securing tabs and being formed, like the securing tabs, in one piece with the tubular member, which has been given a polygonal shape in cross section by means of axially extending bending edges, said bending edges being of two kinds, namely first bending edges located in the border area between each securing tab and support member and second bending edges spaced from the first bending edges and extending from the points of the securing tabs generally parallel to the first bending edges, each tube wall portion located between two adjacent first bending edges and associated to a supporting member being inclined relative to two other similar tube wall portions located adjacent the first-mentioned tube wall portion at opposite sides thereof, each of said securing tabs having portions located more closely to a longitudinal center line of the tubular member than do all first bending edges between securing tabs and support members, said securing tabs as well as said support members having the character of generally triangular teeth, every second of which, namely those forming support members, being bent at an angle to the adjacent securing tabs so as to point in a direction to the longitudinal center line of the tubular member, said securing tabs and the support members being, as viewed on a flat sheet metal blank intended for production of the spacer, generally alike, thus having generally equally wide bases adjoining to a web portion for forming said tubular member of the spacer.

4,475,704

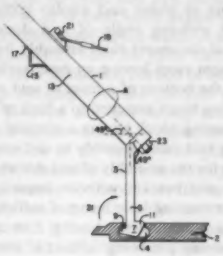
EXTENDED UNIT LOAD DEVICE

Hugo Marom, Zahala, and Shlomo Adler, Kfar Saba, both of Israel, assignors to Adler Cargo Systems Limited, Kfar Saba, Israel

Filed Nov. 16, 1981, Ser. No. 321,633

Int. Cl.³ B65D *19/00*

U.S. Cl. 248—346 **11 Claims**



1. An extended unit load device comprising:

a standard pallet having a peripheral seat track, disposed in its operative orientation in a horizontal plane, said peripheral seat track defining in cross section a recess and first and second edge members partially overlapping said recess;

an inclined side support adapted to be removably and pivotably inserted in the track and oriented in an inclined position, said inclined side support including an attachment leg having an elongate upstanding portion having a generally vertical operative orientation, perpendicular to the plane of said standard pallet, and a foot portion including a toe portion extending in operative orientation sideways in cross section and underlying said first edge member and a heel portion extending in operative orientation sideways in cross section and engaging said second edge member;

a first cable attached at one end thereof to one side of the inclined side support; and

a second cable attached at one end thereof to the other side of the inclined side support;

said first and second cables being anchored at the other ends thereof to the peripheral seat track so as to retain the inclined side support in the inclined position.

4,475,705

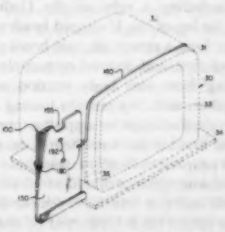
DOCUMENT HOLDER FOR DISPLAY TERMINAL

Helmut H. Henneberg, Canton, and Richard R. Dillion, Wellesley, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jul. 2, 1981, Ser. No. 279,877

Int. Cl.³ A47B *97/04*

U.S. Cl. 248—447.2 **7 Claims**



1. A document holder for attachment to a display terminal, said display terminal having a display screen and a cover, said

cover having a plurality of sides, a bottom and a top, said cover having an annular groove in said plurality of sides, said bottom and said top, said annular groove located approximately in the same plane as said display screen, said document holder comprising:

A. an easel bracket for mounting in said annular groove in said cover of said display terminal; and

B. document easel assembly mounted on said easel bracket whereby adjusting the viewing angle of said display terminal by swiveling or tilting said display terminal automatically adjusts the viewing angle of said document holder and wherein said document easel assembly further comprises:

1. a document easel having an easel surface with a bottom ledge at the bottom of a front of said easel surface; and

2. a mounting block attached to a back of said easel surface, said mounting block having a circular mounting hole for attaching said easel assembly to said easel bracket thereby allowing for the assembly of said document easel assembly to said easel bracket without requiring any tools, said circular mounting hole being of sufficient size to accommodate a mounting pin having a circular cross-section, said mounting pin being formed at one end of said easel bracket; and

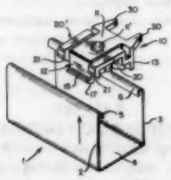
C. a sheet retainer formed to have a back member and two side members, a one of said side members at each end of said back member, each of said two side members having a return at an end not connected to said back member and wherein said mounting block further includes a retainer notch for retaining said sheet retainer between said mounting block and said back of said easel surface.

4,475,706

OVERHEAD MOUNTING BRACKET FOR A HORIZONTAL VENETIAN BLIND ASSEMBLY

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Totowa, N.J.

Filed Nov. 27, 1981, Ser. No. 325,543
Int. Cl.³ E06B *9/38*
U.S. Cl. 248—542 **6 Claims**



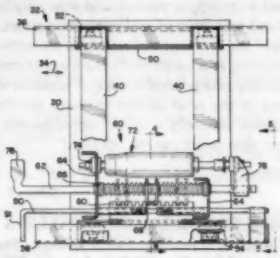
1. An overhead mounting bracket for a horizontal venetian blind assembly including a substantially U-shaped headrail with the ends of the leg of the U-shaped headrail each having an inturned end to form a return rib, said bracket comprising a body portion, and first and second oppositely disposed leg portions depending from said body portion and fixed with respect to each other, each leg portion having a horizontally extending support shelf adapted to support a return rib, characterized in that said bracket has a resilient decoupler means on said body portion adapted to locally engage one return rib of a headrail prior to disengagement of a headrail from the bracket and force and hold said one return rib remote from a position in which said one return rib is supported by the support shelf of the first leg portion to allow said one return rib to pass the support shelf of the first leg portion during subsequent disengagement of the headrail.

4,475,707

SEAT SUSPENSION SYSTEM

Daniel S. Foster, Davenport, Iowa, assignor to Knoedler Manufacturers, Inc., Streator, Ill.

Filed May 14, 1981, Ser. No. 263,602
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—636 **5 Claims**



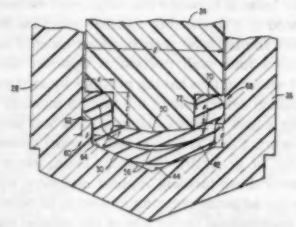
1. A seat mount for a vehicle seat comprising a generally rectangular base having a plurality of rollers adjacent opposed edges, a seat frame having transversely-spaced parallel rails receiving said rollers, a pair of spaced support brackets on said seat frame with a first rod rotatably supported on said brackets and having a radially extending lug between said brackets, first and second coil springs telescoped on said first rod and respectively located between said brackets and said lug, a shock absorber extending parallel to said first rod with one end connected to one of said brackets and an opposite end connected to one end of said rod, said base having a plate having an edge extending parallel to said rod with spaced notches in said edge respectively adapted to receive at least a portion of said lug to define a plurality of different ride positions for said seat frame on said base, said coil springs acting to center said seat frame in each ride position and accommodate movement in opposite directions axially of said rod, and a lock-out member including a second rod extending parallel to said first rod and rotatably supported on said brackets, said second rod having projections defining a space for receiving said lug to lock said seat frame on said base.

4,475,708

INTRAVENOUS TUBING CLAMPING DEVICE

Karl E. Becker, Jr., 275 S. Pershing Ave., Wichita, Kans. 67218

Division of Ser. No. 102,112, Dec. 10, 1979, Pat. No. 4,340,201, which is a continuation-in-part of Ser. No. 863,263, Apr. 5, 1978, abandoned. This application May 11, 1982, Ser. No. 377,056
Int. Cl.³ F16L *55/14*
U.S. Cl. 251—6 **14 Claims**



1. An intravenous tubing clamping device for controlling fluid flow through compressible tubing comprising:

an elongated body member adapted to receive said tubing having a proximal end and a distal end;

said body member including a generally V-shaped bottom wall defining two planar supporting surfaces for said tubing extending logitudinally of said body member and having a substantially constant width and an apex angle of about 60° to 165°, said body member further including ledges extending longitudinally on opposite sides of said V-shaped bottom wall; and

a roller mounted on said body member for movement longitudinally of said body member about an axis of rotation extending transversely of said body member for defining a clamping area between said roller and said planar supporting surfaces which decreases the cross-sectional area of a lumen formed in a central region of the clamped tubing as said roller moves from said proximal end of said body member toward said distal end, said roller defining grooves extending circumferentially around opposite sides of the outer circumference of said roller, said roller grooves defining spaces adapted to receive a portion of the sides of a tubing clamped in said clamping area, said roller grooves cooperating with said ledges to clamp the sides of said tubing in a direction transverse of said body member.

4,475,709

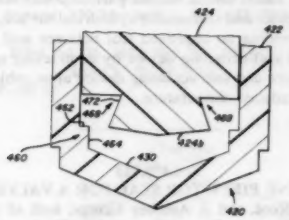
INTRAVENOUS TUBING CLAMPING DEVICE

Karl E. Becker, Jr., 275 S. Pershing Ave., Wichita, Kans. 67218

Continuation-in-part of Ser. No. 102,112, Dec. 10, 1979, Pat. No. 4,340,201, and Ser. No. 283,807, Jul. 16, 1981, abandoned, said Ser. No. 102,112, is a continuation-in-part of Ser. No. 893,263, Apr. 5, 1978, abandoned, said Ser. No. 283,807, is a continuation of Ser. No. 101,800, Dec. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 893,263, ,. This application Jul. 16, 1982, Ser. No. 398,897

Int. Cl.³ F16L *55/14*

U.S. Cl. 251—6 **23 Claims**



1. An intravenous tubing clamping device for controlling fluid flow through compressible tubing comprising:

an elongated body member adapted to receive said tubing having a proximal end and a distal end;

said body member including a generally V-shaped bottom wall defining two planar supporting surfaces for said tubing extending longitudinally of said body member and having a substantially constant width and an apex angle of about 60° to 165°; and

a roller mounted on said body member for movement longitudinally of said body member about an axis of rotation extending transversely of said body member for defining a clamping area between said roller and said supporting surfaces which decreases the cross-sectional area of the lumen of the tubing as said roller moves from said proximal end of said body member toward said distal end, said roller defining grooves extending circumferentially around opposite sides of the outer circumference of said roller, said roller grooves defining spaces adapted to receive the sides of a tubing clamped in said clamping area, said roller grooves being defined by (1) side walls on said body member extending substantially parallel to said longitudinal roller movement on opposite sides of said roller, (2) first surfaces formed circumferentially on said roller adjacent to and on opposite sides of said clamping area, and (3) second surfaces formed circumferentially on said roller substantially perpendicular to said body member walls and each extending substantially parallel to said axis of rotation between a respective first surface and body member wall, said roller grooves cooperating with said body member to clamp the sides of said tubing in a direction transverse of said body member with said tubing being compressively engaged between said body member walls and said first surfaces, said first surfaces being inclined inwardly so as to form acute angles with said second surfaces thereby reducing the width of said roller in a region spaced inwardly from the outer circumference of the roller, the outer peripheral portion of said roller having distal ends merging with the portions of said roller defining said grooves, and said tubing being positively engaged by said second surfaces so that a lumen is defined in a central portion of the tubing through which flows substantially all of the fluid, said roller having a circumference with a generally V-shape with the apex of the V-shape centrally located on the roller and its distal ends merging with said roller grooves, the apex having an angle of about 60° to 180°, the roller cooperating with the planar supporting surfaces of said body member to define a generally V-shaped lumen in the clamped tubing.

4,475,710

ELECTRO-HYDRAULIC CONTROL ACTUATOR FOR TURBINE VALVES

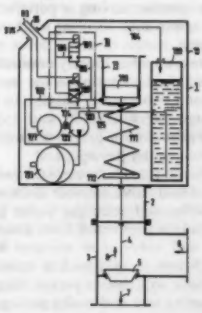
Hans-Joachim Leupers, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,651

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019626

Int. Cl.³ F16K *31/122*

U.S. Cl. 251—30 **6 Claims**



1. An electrohydraulic control assembly for a valve comprising, integrated in a compact control unit connectible with a housing for a valve, hydraulic control cylinder, an hydraulic fluid reservoir, an hydraulic fluid pump driven by an electric motor and an electrohydraulic converter connected to said control cylinder, said reservoir and said pump for adjusting the flow of hydraulic fluid to and from said control cylinder and said reservoir in accordance with electric signals transmitted thereto, two mutually spaced-apart support plates vertically disposed on a base plate connectible with the valve housing, said hydraulic cylinder being fastened to respective ends of said support plates facing away from said base plate, a transverse plate secured to respective edges of said support plates and extending across the space therebetween, a control piston disposed in said cylinder and having a shaft connectible with a shaft of the valve, said control piston being displaceable in a valve-opening and a valve-closing direction, a force-storing spring located between said support plates for loading said

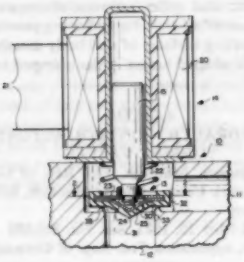
piston in said valve-closing direction, said hydraulic fluid reservoir being fastened to respective edges of said support plates facing away from said transverse plate, said pump and the electric motor for said pump being fastened to said transverse plate, an hydraulic pressure accumulator connected to said pump being fastened to said support plates, and hydraulic connecting means for hydraulically inter-connecting said hydraulic control cylinder, said hydraulic fluid reservoir, said electrohydraulic converter and said pump, said hydraulic connecting means being at least partly made up of channels formed in said support plates.

4,475,711

HIGH PRESSURE GAS VALVE

Robert A. Rountry, Canoga Park, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 30, 1982, Ser. No. 412,631
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—85 **5 Claims**



1. A valve having a valve assembly comprising:
a rigid valve plate having an opening therein,
a resilient valve member having a peripheral means of attachment for removably securing said valve member to said valve plate,
valve actuator stem member loosely connected through said opening to said rigid valve plate for moving said valve member against a valve outlet passage to stop the flow of gas from a high pressure inlet, said loosely connected valve member provides for proper alignment of said valve member and said outlet passage, and
a backup member mounted between said valve plate and the inner surface of said valve member defining a space therebetween whereby said inlet gas under pressure passing through said hole is prevented from distorting said valve member and said valve stem member being free from applying any forces to said backup member at all times within said space to achieve proper alignment between said valve member and said outlet passage.

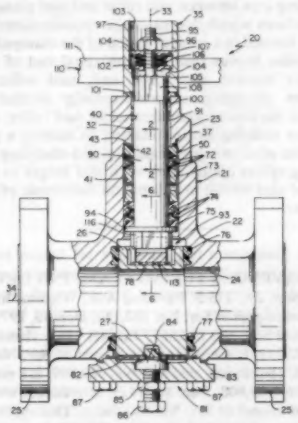
4,475,712

FLUID VALVE AND METHOD OF MAKING SAME

Everett J. DeJager, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Jan. 7, 1982, Ser. No. 337,650
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—214 **21 Claims**

1. In a fluid valve comprising a valve body having a main portion and a transverse portion adjoining said main portion, a flow passage in said main portion for receiving fluid flow through said valve body, a closure member rotatably supported in said main portion for controlling fluid flow through said passage, surface means defining opening means through said transverse portion, said opening means having a central axis, an actuating device for rotating said closure member, said actuating device extending through said opening means and being rotatably supported by said transverse portion, and seal means disposed in said opening means and providing a fluid-tight seal between said transverse portion and said actuating device, the improvement in which, said surface means comprises a first cylindrical surface of a given cross-sectional area and a second cylindrical surface of a larger cross-sectional area, said surfaces being disposed with associated ends immediately adjacent each other to define a shoulder therebetween, an annular recess in said transverse portion extending inwardly of said shoulder and axially along said axis to define a projection



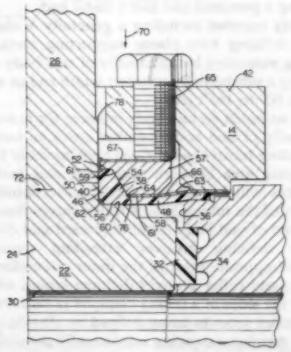
and a sealing surface in said transverse portion wherein said sealing surface faces away from said central axis, and said seal means comprises an annular seal having a first part disposed within said recess and a second part disposed between said actuating device and said second cylindrical surface, said annular seal providing an improved seal between said transverse portion and said actuating device by contracting against said sealing surface and said actuating device upon subjecting said valve to a reduced temperature.

4,475,713

ONE PIECE TOP SEAL FOR A VALVE

C. Lawson Reed, and J. Anthony George, both of Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio

Filed Mar. 19, 1982, Ser. No. 360,323
Int. Cl.³ F16K *31/44*; F16J *15/00*
U.S. Cl. 251—214 **7 Claims**



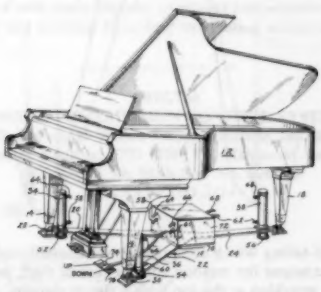
1. A rotary valve, said valve comprising:

a valve body, said valve body having flow passages therethrough;
a cavity, said cavity being located in said valve body, said cavity having an opening in said top of said valve body;
a top closure, said closure being bolted to said valve body over said cavity;
a valve member;
a primary sealing member;
a stem, said stem being integral with said valve member, said stem being rotatable in said cavity in said valve body; and
a top seal assembly, said assembly having a unitary one piece construction, said top seal assembly being secured in position said top closure, said assembly having a centrally disposed aperture, said seal assembly having at least two distinct portions, a first enlarged portion and a second generally planar portion, said first portion being circumferentially disposed about and proximal to said aperture, said second portion being circumferentially disposed about said first portion, said first portion having a generally truncated triangular cross sectional configuration, said first portion having an inner circumferential wall defining said aperture, said first portion having a top wall, said top wall adjoins said inner circumferential wall, said top wall extends to a bearing surface, said bearing surface is a obliquely oriented with respect to both the inner circumferential wall and said planar second portion, said first portion having a bottom surface, said bottom surface being co-planar with said second portion, said bottom surface being substantially parallel to said top wall, said first portion of said top seal assembly having a heighth of at least twice the height of said second portion.

4,475,714
PIANO LIFT

Ronald E. Heiskell, 2632 Mallard Ct., Union City, Calif. 94587; Gregg R. Kirkpatrick, 943 Seascape Cir., Rodeo, Calif. 94572; Garry F. Newman, 2710 Colony Dr., Tracy, Calif. 95376, and James D. Stewart, 259 MacArthur, Apt. 117, Oakland, Calif. 94610

Filed Jul. 26, 1982, Ser. No. 401,861
Int. Cl.³ B66F *7/12*
U.S. Cl. 254—89 H **7 Claims**

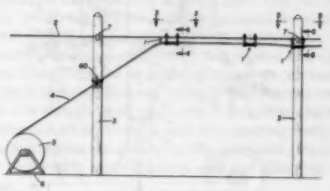


1. Mechanism for supporting and raising a grand piano having three vertical spaced supporting legs two of which are at the front of the piano and the third of which is at the rear end of the piano and including a dolly having three spaced recesses that receive the lower ends of the three legs of the piano so that the dolly may support the piano, a vertically disposed hydraulic cylinder fixed with respect to said dolly and extending upwardly from the level of said recesses and located adjacent to each of said recesses and being disposed in the triangle formed by said recesses, each of said cylinders having a piston movably disposed therein and carrying a piston rod adapted to move downwardly out of the cylinder with corresponding movement of the piston in the cylinder, a pedestal portion on the end of each of said rods and adapted to rest on the supporting floor for the dolly and piano, a source of fluid pressure, and valve means for connecting said fluid pressure source with upper ends of said cylinders so as to tend to move the pistons downwardly in the cylinders and thus move the dolly and piano upwardly while being supported by said pedestal portions.

4,475,715
AERIAL CABLE INSTALLATION BLOCK

William A. Asplin, Sr., Canton, Ohio, assignor to Rescue Cable Design, Inc., Canton, Ohio

Filed Sep. 27, 1982, Ser. No. 424,104
Int. Cl.³ B66D *3/04*
U.S. Cl. 254—134.3 R **14 Claims**



1. An improved block construction for installing aerial cable on a supporting cable, said construction including:
(a) a frame having a pair of spaced upstanding vertical members and a pair of spaced outwardly extending members;
(b) spring biased plunger means mounted on each upstanding vertical member, said plunger means being biased toward a clamping position against the supporting cable for releasably mounting the frame on a supporting cable; and
(c) means mounted on each of the outwardly extending members for receiving and supporting one or more aerial cables to provide a pair of horizontally spaced cable supports for the aerial cable to reduce bending of the cable during installation.

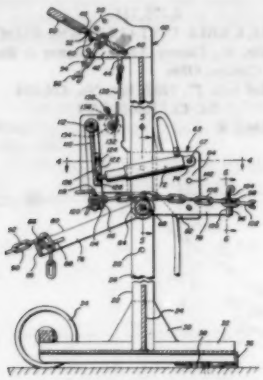
4,475,716
HEIGHT ADJUSTABLE TOWER MOUNTED PULL ASSEMBLY

Davis R. Jarmin, 610 Ward Dr., and Virgil H. Hinson, 206 Fairway Oaks Dr., both of Brunswick, Ga. 31520

Filed Sep. 28, 1982, Ser. No. 427,528
Int. Cl.³ B21D *1/00*; B25B *25/00*
U.S. Cl. 254—228 **6 Claims**

1. A pull assembly for applying a straightening pull on a frame or body portion, said assembly including a vertically elongated support for mounting from a suitable floor surface, a follower mounted on said support for adjustable positioning therealong, said vertically elongated support including first vertically spaced horizontal opening means, said follower including second horizontal opening means selectively registrable with said first horizontal opening means, horizontal pin means removably passed through said second opening meanings and a selected first opening means registered therewith releasably retaining said follower in adjusted position on said support, vertically swingable first elongated arm means including a first end pivotally anchored to said pin means and a second end projecting outwardly from one side of said support and including first anchor means for anchoring to free end of a floor anchored elongated tension member thereto, second elongated horizontal arm means including a first end anchored relative to said pin means and the second end projecting outwardly from the side of said support opposite said one side thereof, a vertically elongated pull lever pivotally supported at its upper end from said follower for limited oscillation about an axis transverse to said lever, support and arm means and with

said lever generally paralleling said support, an elongated pull member, second anchor means carried by the lower end of said lever for selectively anchoring one end of said pull member thereto, said second anchor means being generally horizontally aligned with said second end of said second arm means, said second end of said second arm means including third anchor means for releasably engaging and anchoring longitudinally



spaced portions of said pull member relative thereto, and an adjustable anchored elongated horizontal and longitudinally extendible thrust means having one end pivotally anchored relative to said follower and the other end engaged with said other end of said lever for angularly displacing the latter relative to said follower in a direction to effect a pull on said pull member extending inwardly along said second arm means from said second end thereof toward the first end thereof.

4,475,717

TRACTION APPARATUS ANCHORED BY MEANS OF A SECURING PIN

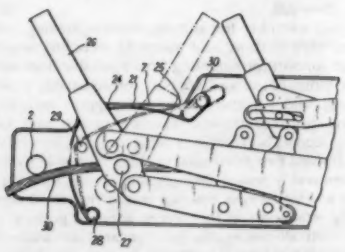
Andre Desplats, Boulogne Billancourt, and Hans Klabunde, Mareil Marly, both of France, assignors to Societe dite: Tractel, S.A., France

Filed Jul. 9, 1982, Ser. No. 396,589

Claims priority, application France, Jul. 10, 1981, 81 13620

Int. Cl.³ B66D *3/02*

U.S. Cl. 254—264 **2 Claims**



1. In a traction apparatus through which passes a cable and which presents anchoring means adapted to be attached to a fixed point when the apparatus is worked, a case containing the mechanism of the apparatus and which comprises:

(a) a first half-case made from pressed steel sheet,

(b) a first chimney provided inwardly in said half-case for receiving one end of a transverse pin acting as anchoring means for the apparatus,

(c) a second chimney provided inwardly in said first half-case and adapted to receive one end of a transverse pivoting shaft of a warping control lever of the apparatus,

(d) a first reinforcement part made from pressed steel sheet and provided with holes which correspond in diameter and in between shaft distance with said first and second chimneys provided in said first half-case, so that by mounting said first reinforcement part on said first half-case is obtained a first half-case assembly of great rigidity,

(e) a second half-case made from pressed steel sheet and symmetrical with respect to said first half-case,

(f) a first chimney provided inwardly in said second half-case and adapted to receive the other end of the transverse pivoting shaft of the warping control lever,

(g) a second chimney provided inwardly in said second half-case and adapted to receive the other end of the transverse pivoting shaft of the warping control lever, and

(h) a second reinforcement part made from pressed steel sheet and symmetrical with respect to said first reinforcement part, whereby, by mounting said second reinforcement part on said second half-case, a second half-case assembly of great rigidity and symmetrical with relation to said first half-case assembly is provided, so that by assembling said first and second half-case assemblies about a longitudinal axis of symmetry, on said transverse pin and said transverse pivoting shaft, is obtained a case adapted to resist to high stresses imparted thereto through said anchoring means.

4,475,718

SELF-TAILING WINCH

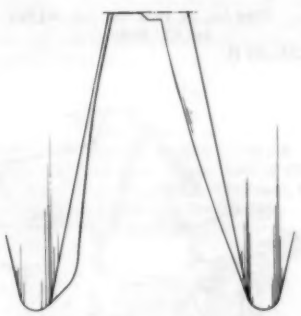
Willem P. van Beers, Brielle, Netherlands, assignor to Meissner International B.V., Brielle, Netherlands

Filed May 26, 1983, Ser. No. 498,262

Claims priority, application Netherlands, May 28, 1982, 8202198

Int. Cl.³ B66D *1/30, 1/22*

U.S. Cl. 254—371 **4 Claims**



1. A self-tailing winch comprising a substantially cylindrical housing arranged for rotation about a central shaft, and housing being provided at the top with a flange thinning towards the circumference and an annular plate disposed on the top of the housing and thinning towards the circumference, said plate having a diameter substantially equal to that of the flange in such a way that between the flange and the annular plate there is produced a V-shaped slot, and a stripper arm mounted above the annular plate, said stripper arm having a portion extending downwardly beyond the circumference of the annular plate, characterized in that raised teeth are provided on the facing surfaces of said annular plate and said flange, said surfaces defining the V-shaped slot, so that opposite each tooth on the flange surface there is present a tooth on the surface of the plate, one tooth of each pair of opposed teeth being convex and one tooth being concave in the direction along the length of the teeth from a point near the inside of the V-shaped groove

towards a point near the circumference of the respective flange or plate.

4,475,719

FLAME CUTTING MACHINE

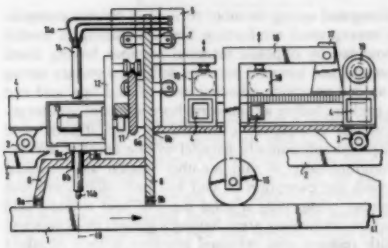
Horst K. Lotz, Wiesbaden-Delkenheim, Fed. Rep. of Germany, assignor to Aute Gesellschaft fuer autogene Technik mbH, Zurich, Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,352

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 8300198

Int. Cl.³ B23K *7/02*

U.S. Cl. 266—48 **26 Claims**



1. A flame cutting machine for cutting a workpiece, comprising: at least one torch having an operating end portion; means for moving said torch transversely with respect to the workpiece feed direction; a length of measuring means for measuring a relative travel as between the torch and the workpiece, including a rotary measuring member adapted to run on a surface of the workpiece; a support plate having an upstream side and a downstream side with respect to the workpiece feed direction; means for movably mounting said support plate; means for moving said support plate towards and away from a said workpiece; and a hood means carried by said support plate on its said upstream side and adapted to co-operate with said workpiece to define an enclosure at least for said operating end portion of said torch, thereby to protect heat-sensitive components of said machine from heat originating within said hood means.

4,475,720

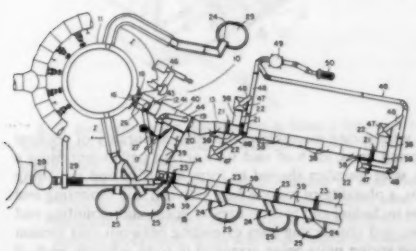
CASTHOUSE EMISSION CONTROL SYSTEM

Gilbert R. Broom, 11 Willow La., Schererville, Ind. 46375, and Michael K. Buckley, 3703 175th Pl., Hammond, Ind. 46323

Filed Mar. 14, 1983, Ser. No. 474,888

Int. Cl.³ F27D *3/14*

U.S. Cl. 266—157 **8 Claims**



1. A casthouse emission control system for controlling the emissions released from the pig iron and slag released from the blast furnace and flowing through the main iron trough, the iron runner and the slag runner in a casthouse, said system comprising:

a blast furnace having a tap hole;

a main iron trough having a first end and a second end, said first end of said main iron trough in flow communication with said tap hole;

a main iron runner having a first end and an iron exit end, said first end of the main iron runner in flow communication with said second end of the main iron trough;

a slag runner having a first end, said first end of the slag runner in flow communication with said second end of the main iron trough;

tap hole cover means for covering said first end of the main iron trough and for evacuating emissions released by said pig iron and slag flowing through said first end of the main iron trough, said tap hole cover means being in flow communication through first ducting with first scrubber means for receiving the emissions evacuated by said tap hole cover means and for cleaning said emissions;

removable cover means for covering said second end of the main iron trough and for evacuating emissions released by said pig iron and slag flowing through said second end of the main iron trough, said removable cover means being in flow communication through said first ducting with said first scrubber means for receiving the emissions evacuated by said removable cover means and for cleaning said emissions;

main iron runner cover means for covering the main iron runner to substantially prevent the escape of emissions into the ambient air;

slag runner cover means for covering the slag runner to substantially prevent the escape of emissions into the ambient air; and

iron runner emission evacuation means disposed adjacent said iron exit end of the iron runner for evacuating emissions released by said pig iron and slag flowing through said iron exit end, said iron runner emission evacuation means being in flow communication through second ducting with second scrubber means for receiving the emissions evacuated by said removable cover means and for cleaning said emissions.

4,475,721

INDUCTION HEATED CASTING CHANNEL WITH GRAPHITE SLEEVE

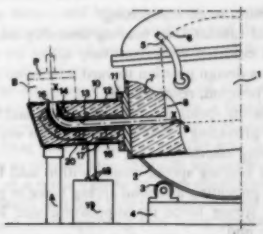
Joël Pamart, Chalon, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Aug. 31, 1983, Ser. No. 528,002

Claims priority, application France, Sep. 13, 1982, 82 15556

Int. Cl.³ B22D *35/06*; **C21C** *5/42*

U.S. Cl. 266—236 **4 Claims**



1. A casting channel apparatus for molten metal including means defining a casting channel (13), a refractory lining (12) surrounding said channel, and a cooled induction heating coil (17) embedded in said lining and surrounding said channel over substantially its entire length, said coil being energized by an aperiodic electrical generator (19), characterized by: a multi-segment graphite susceptor sleeve (20) surrounding said chan-

nel over said coil wherein said casting channel and graphite sleeve both include a straight portion and an upwardly bent portion (14) leading to a casting orifice (15), the interior of said sleeve being covered with a continuing coating of refractory material defining a flow bed of said channel, said sleeve serving as a permanent secondary to enable the heating of said channel upon energization of said coil even in the absence of molten metal within said channel.

4,475,722

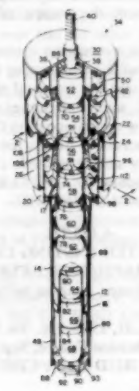
SUSPENSION STRUT

H. Neil Paton, 2521 W. Montlake Pl. E.; John B. Skilling, 539 McGilvra Blvd., E., both of Seattle, Wash. 98112; Jeffery P. Sandys, and E. Frederick Gylland, Jr., both of Seattle, Wash., assignors to H. Neil Paton and John B. Skilling, both of Seattle, Wash.

Continuation-in-part of Ser. No. 242,511, Mar. 10, 1981, Pat. No. 4,358,096, which is a continuation of Ser. No. 16,533, Mar. 11, 1979, abandoned. This application Feb. 17, 1982, Ser. No. 349,583

Int. Cl.³ F16F *3/10*

U.S. Cl. 267—9 C **14 Claims**



1. A suspension strut, comprising:

an elongated tubular load bearing assembly adapted to extend and contract reciprocatively along its longitudinal axis from a design position toward a rebound position and a jounce position, respectively;

first load bearing spring means surrounding said load bearing assembly providing a first spring force for supporting said load bearing assembly;

second load bearing spring means within said load bearing assembly providing a second spring force in parallel with said first spring force for supporting said load bearing assembly; and

a frictional damping assembly including damping means, and operator means surrounding said load bearing assembly for receiving said first spring force and applying a component of said first spring force to said damping means as a normal force urging said damping means inwardly into contact with said load bearing assembly so as to apply a frictional damping force to said load bearing assembly during extension and contraction thereof.

4,475,723

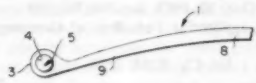
ELONGATED SPRING MEMBER

Leonard S. Meyer, Columbia, S.C., assignor to Kidde Recreation Products, Inc., North Brook, Ill.

Filed Apr. 28, 1982, Ser. No. 372,537

Int. Cl.³ F16F *1/18*

U.S. Cl. 267—47 **9 Claims**



1. An elongated spring member formed of strands comprising resin impregnated reinforcing fibers including, a medial portion bounded by opposite terminal portions having distal tips, said medial and terminal portions defining a unitary spring member, an end provision adjacent each of said tips, said end provision each including a transverse bore adjacent said terminal portion tips completely encircled by said strands, said strands disposed substantially parallel to one another and extending longitudinally of said member medial and terminal portions, with the exception of said end provision bores said spring member comprising a solid mass of said strands, said medial portion comprising areas having a greater thickness and lesser width relative said terminal portions with a constant cross-sectional area of said mass of strands throughout the longitudinal extent of said medial portion and at least a substantial extent of said terminal portions, and said strands extending in a continuous uninterrupted manner from one said terminal portion tip through said medial portion then encircling said end provision bore at the other said terminal portion tip and returning through said medial portion to encircle said bore of said one terminal portion tip.

4,475,724

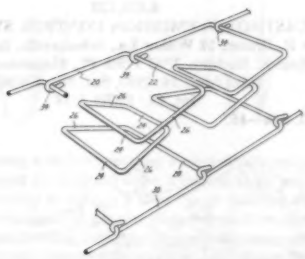
WIRE SPRING ASSEMBLY FOR SOFA SLEEPER MATTRESSES

William L. Hancock, Lexington, Ky., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed May 20, 1982, Ser. No. 380,189

Int. Cl.³ F16F *3/00*

U.S. Cl. 267—103 **8 Claims**

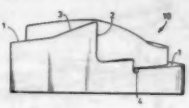


1. A wire spring assembly comprising a plurality of resilient wire spring units, each of said wire spring units comprising a unitary wire member shaped to form a pair of end mounting portions, a plurality of torsion bars between said mounting end portions including end torsion bars adjacent said mounting end portions, and connecting bars extending between said torsion bars, said spring units being arranged in rows wherein each of said spring units is supported solely by attachment of the end mounting portions and the end torsion bars thereof to the corresponding end torsion bars and end mounting portions, respectively, of adjacent spring units in the same row.

4,475,725
ELASTIC SUPPORT FOR HELICAL SPRINGS

Gerhard Niemann, Bramsche, Fed. Rep. of Germany, assignor to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Continuation of Ser. No. 198,265, Oct. 17, 1980, abandoned. This application Dec. 9, 1982, Ser. No. 448,507
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942135
Int. Cl.³ F16F 1/12
U.S. Cl. 267—179 1 Claim

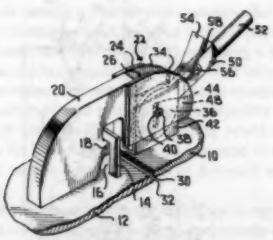


1. A suspension spring assembly for a motor vehicle, comprising a helical spring having an end coil terminating in a spring end and a support of rubber-like elastic material having a helically ascending seating face receiving the end coil; said seating face being adjoined by a stepped portion for abruptly terminating said seating face; said helically ascending seating face having consecutive first and second length portions; said first length portion extending from said spring end along a major part of said end coil and having a first slope at least equalling the slope of said end coil in the unloaded state of the helical spring; said second length portion adjoining said first length portion and terminating at said stepped portion; said second length portion having a second slope greater than said first slope and greater than the slope of said end coil in the unloaded state of the helical spring; said end coil freely resting on said first and second length portions of said seating face from said spring end to said stepped portion in said unloaded state.

4,475,726
MECHANISM FOR POSITIONING WORKPIECES

Richard B. Smith, 4 Bird La., Newport News, Va. 23601

Filed Sep. 18, 1981, Ser. No. 303,659
Int. Cl.³ B25B 1/20
U.S. Cl. 269—41 18 Claims



1. A mechanism for positioning at least a first and a second workpiece such that said workpieces are in abutment, said mechanism comprising:

a support structure which is attachable to said first workpiece and firmly abuts said first workpiece, said support structure including a first portion which extends over said second workpiece when said mechanism is employed, said first portion being comprised of a first pair of spaced side plates,

a cam rotatably attached to said first pair of side plates,

a load bearing member which is designed to engage said second workpiece and is slidably engaged by and between said first pair of side plates,

said cam abutting said load bearing member,

wherein the rotation of said cam slides said load bearing member relative to said support structure,

wherein said cam and said load bearing member are designed and arranged such that when said cam rotates in a predetermined direction, the distance between the axis of rotation of the cam and the surface of the load bearing member which engages the second workpiece increases and said second workpiece is pushed by said load bearing member in the direction the load bearing member is moving a distance equal to the aforesaid increase in distance,

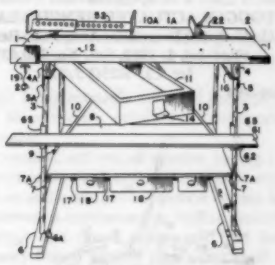
said load bearing member is comprised of a bottom edge member and a pair of second side plates extending above said bottom edge member, said second pair of said plates interfacing with said first pair of side plates,

wherein said cam is located at least in part between said second pair of side plates.

4,475,727
WORKBENCH WITH MULTIPLE-CLAMPING ARRANGEMENT

Victor H. Goulter, 485 Molimo Dr., San Francisco, Calif. 94127

Filed Mar. 23, 1983, Ser. No. 478,061
Int. Cl.³ B25B 1/10
U.S. Cl. 269—88 1 Claim



1. A workbench comprising:

(a) a rigid planar work surface, said work surface having a bifurcating slot therein which divides said work surface into first and second portions, said second portion being elongated and having an edge spaced from an edge of said first portion in a parallel manner by said slot,

(b) a first stop member mounted to said second portion, said stop member having a faceplate perpendicular to said work surface, said first stop member containing slide and locking means, and being extendable around at least a part of said second portion for enabling said first stop member to move along said second portion and be locked in any position therealong,

(c) a force-applying tool mounted on said second portion adjacent one end thereof, having a faceplate extending perpendicular to said work surface, and comprising means for moving said faceplate along the length of said second portion so as to be able to clamp and apply force to workpieces of a wide variety of sizes positioned between said faceplate of said first stop member and said force-applying tool, said force-applying tool being pivotable in a direction parallel to said work surface, and

(d) a second stop member affixed to said first portion at a location remote from said pivotable force-applying tool and having a faceplate extending perpendicular to said work surface and said faceplate of said first stop member, whereby said force-applying tool can be pivoted around so that its faceplate can face either that of either said first or said second stop member, thereby to be able to clamp

and apply force to workpieces of a variety of sizes positioned between said faceplate of said force-applying tool and either of said stop members,

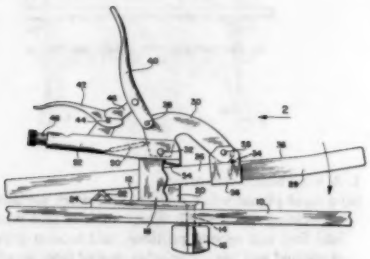
(e) said first stop member further comprising a channel part having a center portion extending across a top surface of said second portion of said work surface and having two flanges extending adjacent two respective sides of said second portion, a locking bar extending from said channel part around the sides of said second portion and across the bottom surface of said second portion, said faceplate extending from and perpendicular to said center portion of said channel part, and a pair of ears extending up from said center portion of said channel part and parallel to said flanges, each ear having a hole therein, said locking bar having a pair of arms with a respective pair of guide holes therein adjacent the ends thereof, said guide holes being adjacent the respective holes of said ears, and a locking pin having two kinks and an offset cam portion therebetween, said locking pin extending through both of said pair of holes.

4,475,728

TOGGLE ACTUATED BENCH CLAMP

Arthur K. Haddad, 139 Everglades Ave., Palm Beach, Fla. 33480

Filed Jul. 1, 1982, Ser. No. 394,427
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—94 **2 Claims**



1. A toggle actuated bench clamp comprising a swivel plate, an upright on the plate, a hold down arm pivoted with respect to the upright at a point removed from the plate, a toggle actuated device associated with the hold down arm to cause the latter to pivot downwardly, and including means to release the hold down arm,

said upright including guide means, an elongated bar loosely held in the guide means, the bar and hold down arm being coplanar vertically, the bar being located beneath the hold down arm so that the arm forces the bar downwardly when the toggle is actuated to move the hold down arm down,

said bar being free for longitudinal adjustment when released, and having a clamping end and an opposite free end, the hold down arm being adjacent the clamping end of the bar, the plate being adapted to be mounted on a bench or table, and the clamping end of the bar extending outwardly beyond the plate, clamping an object to the bench or table,

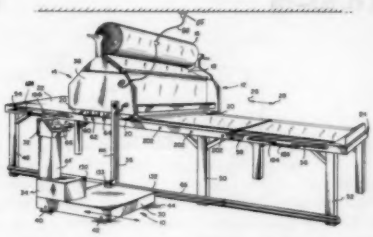
a fulcrum on the plate upon which the free end of the bar rests, the fulcrum and the clamping end of the bar being at opposed aspects of the upright.

4,475,729

DRIVE PLATFORM FOR FABRIC SPREADING MACHINES

Conrad A. Costigan, Richmond Hill, N.Y., assignor to Spreading Machine Exchange, Inc., New York, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,396
Int. Cl.³ B65H *29/46*
U.S. Cl. 270—31 **12 Claims**



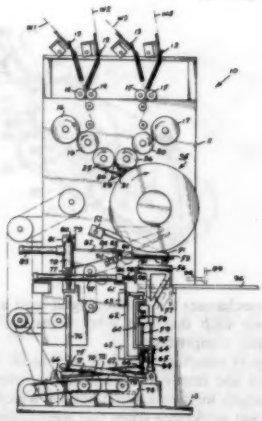
1. A drive platform assembly for a fabric spreading machine having a fabric spreading carriage mounted on a cutting table, said drive platform assembly comprising platform means disposed adjacent said fabric spreading machine, drive wheels mounted on said platform means, electrical drive motor means mounted on said platform means, driving connection means connecting said drive motor means and said drive wheels, electrical connection means for connection of said drive motor means to a source of electric power, control means for controlling starting, stopping and reversing motion of said platform means, and connecting link means connecting said platform means and said fabric spreading carriage thereby enabling said platform to drive said fabric spreading carriage.

4,475,730

APPARATUS FOR FOLDING AND STACKING PAPER PRODUCTS

John F. Trogan, Ashland, Wis., assignor to C.G. Bretting Mfg. Co., Inc., Ashland, Wis.

Filed Mar. 23, 1983, Ser. No. 477,898
Int. Cl.³ B41L *43/04*
U.S. Cl. 270—41 **7 Claims**



1. An apparatus for continuously folding, combining, and stacking a plurality of webs of flexible material comprising a frame, folding means on said frame for folding a plurality of

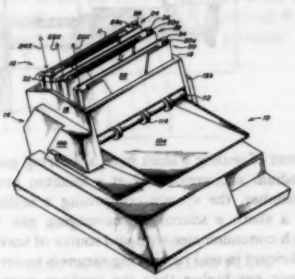
webs of flexible material to a desired cross-sectional configuration, first pull roll means for combining first and second folded webs and directing the same along a first path, second pull roll means for combining third and fourth folded webs and directing the same along a second path, anvil roll means and cooperating cutting means disposed along each path for cutting said webs into segments of predetermined length, a pair of transfer rolls having means for stripping the segments from said anvil rolls, said transfer rolls cooperating with each other to combine the first and second segments of said first path with the third and fourth segments of said second path to form a group of segments, packer roll means having means for stripping said group of segments from said transfer rolls, and means for discharging said group of segments from said packer roll means to form a generally vertical stack of superposed segments.

4,475,731

PROGRAMMABLE, MECHANICAL SYSTEM FOR FEEDING CUT SHEET PAPER TO A PRINTER

Harold Wood, Herkimer, N.Y., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Dec. 17, 1982, Ser. No. 450,806
Int. Cl.³ B65H 5/26
U.S. Cl. 271—9 **24 Claims**



1. In a printer having a plurality of cassettes that each hold a supply of cut sheet paper and have an integral paper feed roll for said cut sheets, the improvement comprising a mechanical system for selectively operating the feed roll of only a selected one of said cassettes, said mechanical system comprising,

a frame secured on said printer that replaceably holds said plurality of cassettes in a paper feeding position,

drive means for said paper feed rolls mounted in said frame, said drive means being operable in forward and reverse directions,

a plurality of mechanical selector means each mounted in an associated one of said cassettes and operatively engaged to said drive means when said cassettes are held in said frame, each of said selector means including combination means operable through a series of rotations and counter-rotations, said selector means operating in response to a preselected series of rotations and counter-rotations of said combination means to transmit power from said drive means to an associated feed roll, and

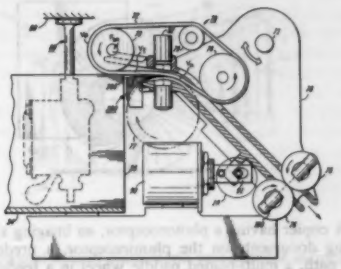
means for uniquely associating a programmed sequence of movements of said drive means in said forward and reverse directions with said preselected sequence of rotations and counter-rotations whereby one of said combination means and its associated selector means is selected for said power transmission.

4,475,732

SHEET FEEDING AND SEPARATING APPARATUS WITH STACK FORCE RELIEF/ENHANCEMENT

Don P. Clausing, Rochester; Maurice F. Holmes, Brighton; Raymond A. Povio, Pittsford, and Robert P. Rebres, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 420,966
Int. Cl.³ B65H 5/02
U.S. Cl. 271—10 **2 Claims**



1. A sheet feeding and separating apparatus adapted to feed and separate sheets individually from a stack of sheets, comprising in combination;

an endless belt mounted for sheet feeding engagement with an edge of the stack of sheets and applying a normal force thereto;

said feed belt being rotatably mounted between spaced roll supports to provide a deformable unsupported section therebetween;

a forward rotatable roll retard member having a supported curved frictional retard surface deformably engaging said feed belt in said unsupported section of said feed belt to form therewith a corresponding curved separating retard nip in which said retard surface and said feed belt are continuously biased against each other, said roll retard member having a greater diameter than either of said roll supports and including a drag brake located interiorly thereof, said drag brake being adapted such that single sheets passing through said retard nip will rotate and retard roll and multifeeds through said retard nip will cause said drag brake to inhibit rotation of said retard roll;

a guide means located between the stack of sheets and said retard nip for supporting and gating sheets fed from the stack said guide means including a frictional top surface and a beveled edge for breaking up and shingling slugs of sheets before they reach said retard nip;

stack force relief sensor means mounted in close proximity to said retard nip for signaling the presence or absence of a sheet in the vicinity of said retard nip;

a movably mounted frame member adapted to move about an off center pivot point, said frame member being adapted for supporting said feed belt, said retard member and said stack force relief sensor means;

stack height sensor means adapted to initiate movement of said stack toward said feed belt whenever the normal face of said feed belt against said stack of sheets is less than a predetermined amount; and

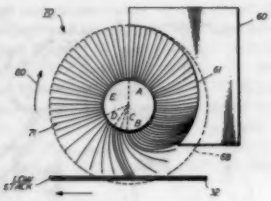
actuator means for changing the normal force of said feed belt against said stack, said actuator means including a solenoid adapted to be actuated once a signal is received from said stack force relief sensor means to move said frame and reduce the normal force of said feed belt against said stack of sheets to a minimum value, said solenoid including a plunger with said plunger being coupled to said frame member by a low rate coil spring.

4,475,733

ENHANCED PADDLE WHEEL INERTIAL SEPARATOR AND TRANSPORTER

Richard C. Benson, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1982, Ser. No. 404,256
Int. Cl.³ B65H 3/06
U.S. Cl. 271—120 1 Claim



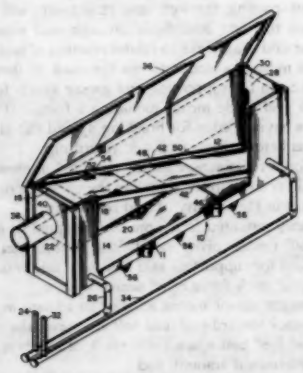
1. A copier having a photoreceptor, an imaging system for imaging documents on the photoreceptor, a predetermined paper path, a multi-bladed paddle wheel in a feeder for forwarding sheets individually from a stack of sheets into said paper path, characterized by an inwardly spiraling track positioned adjacent the paddle wheel and adapted to extend thereabout at least a quadrant of a circle, said inwardly spiraling track increasingly compresses a plurality of the blades of the paddle wheel simultaneously as the paddle wheel is rotated to retard blade tip motion and then allow the blades to individually spring forward just prior to and during sheet contact in order to avoid undue inertial and frictional loads upon the blades and thereby reduce blade wear to a minimum.

4,475,734

DUAL WATER CHAMBER BULLET TRAP

Oliver L. Clarke, III, Edwardsville, and William E. Orrill, Godfrey, both of Ill., assignors to Olin Corporation, Stamford, Conn.

Filed Oct. 5, 1983, Ser. No. 539,343
Int. Cl.³ F41J 1/12
U.S. Cl. 273—410 19 Claims



1. A bullet trap which comprises:

a downwardly, rearwardly inclined impact plate for being repetitively impacted by bullets and deflecting said bullets downwardly and rearwardly;

a lower water chamber below said plate for receiving a desired quantity of water and thereafter for receiving and decelerating said deflected bullets; and

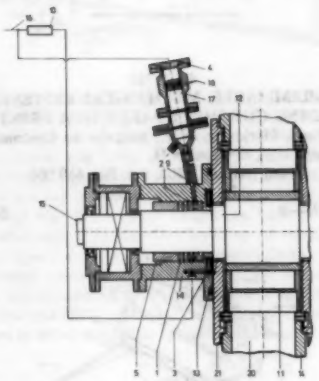
an indicator means for indicating if said plate is penetrated by one of said bullets, wherein said indicator means comprises an upper water chamber above said impact plate and adopted to receive and decelerate said penetrating bullet.

4,475,735

SYSTEM FOR SEALING SHAFTS AGAINST SOLID CONTAINING GASEOUS MEDIA

Peter Smuda; Rainer Wernecke, and Klaus Werner, all of Freiberg, German Democratic Rep., assignors to Brennstoffinstitut Freiberg, Freiberg, German Democratic Rep.

Filed Jan. 25, 1983, Ser. No. 460,883
Claims priority, application German Democratic Rep., Mar. 8, 1982, 237937
Int. Cl.³ F16J 15/40
U.S. Cl. 277—3 7 Claims



1. A system of sealing a shaft from a wearing gaseous compressed medium accommodated at a medium pressure in a medium chamber, the system comprising a sealing box arranged on a shaft; a source of scavenging gas; lubricating means which communicates with said source of scavenging gas so that a lubricant in said lubricating means is under a pressure of scavenging gas higher than the medium pressure in the medium chamber and is supplied to said sealing box; and means for throttling a portion of scavenging gas from said source, said means for throttling being arranged so that the pressure of the throttled portion of scavenging gas is lower than the pressure in said lubricating means but higher than the medium pressure in the medium chamber, and supplying the throttled portion of scavenging gas into the region of said sealing box.

4,475,736

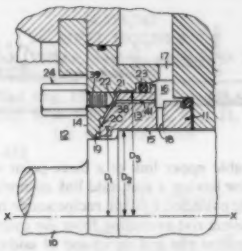
BUSHING SEAL VALVE

Gerald Lesiecki, Greendale, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 10, 1983, Ser. No. 465,602
Int. Cl.³ F16J 15/00
U.S. Cl. 277—3 13 Claims

1. A bushing seal for a rotary body for sealing a high pressure fluid area from a low pressure fluid area with said bushing seal comprising a bushing surrounding said rotary body and enclosed within a housing; opposing surfaces of said bushing and rotary member defining a restrictive fluid passage between said high and low pressure areas; means for supplying a flow of a sealing fluid to said passage intermediate said high and low pressure areas at a pressure sufficient to block a flow of a high pressure fluid from said high pressure area toward said lower pressure area; said bushing having a face portion abutting a portion of said housing and urged against said housing with a

nominal force which varies in magnitude in response to the pressure of said sealing fluid; said bushing and said housing defining a chamber positioned such that at a pressure in said chamber less than the pressure of said sealing fluid, said face portion is urged against said housing with a force in addition to said nominal force; means for permitting fluid flow communication between said chamber and said means for supplying said flow of said sealing fluid; and valve means responsive to the



pressure of said sealing fluid for regulating fluid flow from said chamber; said valve means having means defining an orifice connecting said chamber in fluid flow communication with a low pressure area; means for varying the size of said orifice inversely proportional to the pressure of said sealing fluid whereby a low additional force is provided when said sealing fluid is at a high pressure and a high additional force is provided when said sealing fluid is at a low pressure.

4,475,737

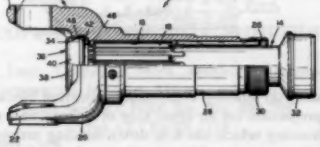
SLIP SPLINE SEALING PLUG

Thomas J. Cook, Jr., Oregon, and Jay W. Thorngurgh, Toledo, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed May 14, 1982, Ser. No. 378,044

Int. Cl.³ F16J *15/00*; F16C *33/76*

U.S. Cl. 277—182 **11 Claims**



1. In a slip spline assembly comprising; a yoke having a splined bore, said bore having first and second opposed open ends, the improvement comprising:

a groove in one of said yoke bore ends,

a plug for closing said one of said yoke bore ends, said plug comprising a closed end, a side wall integrally connected to said closed end, said side wall having a free end, a flexible portion integrally connected to said side wall free end having a radially outwardly extending shoulder engaging said yoke bore groove for positively locking said plug in said yoke bore.

4,475,738

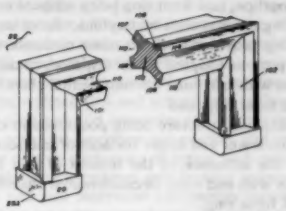
DYNAMIC SEAL ARRANGEMENT WITH X-SHAPED SEAL

Fred C. Eicher, Louisville, and Charles F. Evans, La Grange, both of Ky., assignors to Hilliard Lyons Patent Management Inc., Louisville, Ky.

Filed Apr. 15, 1982, Ser. No. 368,565

Int. Cl.³ F16J *15/32, 15/48*

U.S. Cl. 277—206 A **10 Claims**



1. A channel shaped elastomeric seal member including an elongate web member, and parallel laterally extending leg members at the ends of said web to be received in a channel shaped groove of a selected element having a first channel groove to receive said web and mutually parallel second channel grooves extending laterally from opposite ends of said first channel groove to receive said leg members, said first channel groove and said second channel grooves each being defined by a base and opposed spaced sides to sealably engage a channel shaped sealing surface adjacent said element where fluid pressure is selectively applied to at least one side of said seal and where said seal member, in cross section, includes a central body with first and second spaced feet extending outwardly therefrom to be received in and engage said opposite sides and said base of said first and second grooves, and third and fourth feet extending outwardly from said web and said leg members along a portion thereof to slidably engage said sealing surface wherein fluid can be applied to at least one of said third and fourth feet to urge said at least one of said third and fourth feet to sealing relation with said sealing surface.

4,475,739

PISTON RING ASSEMBLY FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

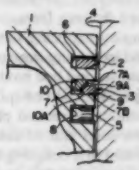
Yasuo Nakajima, Yukosuka; Shinichi Nagumo, Yokohama; Yoshifumi Hase, Yokohama, and Takaharu Gotoh, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 29, 1983, Ser. No. 490,022

Claims priority, application Japan, May 24, 1982, 57-75802[U]

Int. Cl.³ F16J *9/22*

U.S. Cl. 277—216 **5 Claims**



1. A piston ring assembly for an automotive internal combustion engine, comprising:

a first compression ring disposed in a first groove formed in the outer circumferential surface of the head portion of the piston reciprocating in sliding contact with a cylinder

inner surface, said first compression ring being provided with double-stepped mating ends; and

a second compression ring disposed in a second groove formed in said outer circumferential surface at a position spaced apart from said first groove in the direction opposite to the combustion chamber of said engine, said second compression ring being constructed in the form of a double-ring structure which comprises:

a front ring provided with an inner circumferential chamfered portion, said front ring being adapted to be disposed in sliding contact with said cylinder inner surface; and

a rear ring provided with an outer circumferential chamfered portion adapted to be disposed, under tension, in contact with said inner circumferential chamfered portion of said front ring; and

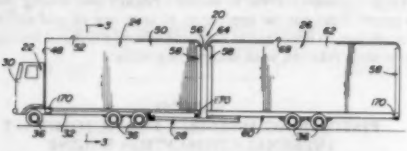
said double-ring structure being positioned in close contact with the lower and upper surfaces of said second groove, under the influence of the tension of said rear ring, in contact with said inner circumferential chamfered portion of said front ring.

4,475,740

ARTICULATED TRUCK/TRAILER COMBINATION

Leonard Strick, 2401 Pennsylvania Ave., Philadelphia, Pa. 19130

Filed Apr. 27, 1981, Ser. No. 258,149
Int. Cl.³ B60D 1/14
U.S. Cl. 280—403 **15 Claims**



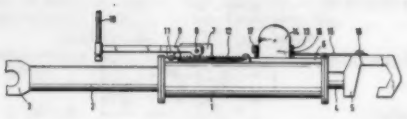
1. An articulated vehicle for carrying cargo comprising a tractor having a cab and a frame including a pair of rear wheels fixedly mounted thereon; a first cargo-carrying bed releasably mounted on said frame; a trailer having a second cargo-carrying bed mounted on at least one pair of wheels and coupled to said first bed by an articulated connection comprised of first and second coupling means; said first bed having a forward end and a rear end, said first coupling means being fixedly mounted to the lower surface of said first bed forwardly of the rear end thereof a first predetermined distance from said rear end of said first bed, said first coupling means being mounted to said bed behind said rear wheels and extending downwardly below the top of said rear wheels; said second bed having a forward end and a rear end and having said second coupling means fixedly mounted thereon and extending a second predetermined distance forwardly of said forward end of said second bed for pivoting engagement with said first coupling means so that said first and second beds can pivot with respect to each other through an arc whose radius is equal to said second predetermined distance, said first predetermined distance being slightly less than said second predetermined distance so that said first and second beds are closely spaced to one another but do not impede the pivoting action of said beds through said arc so that said vehicle can negotiate corners and turns easily.

4,475,741

THREE POINT SUSPENSION DEVICE FOR TRACTORS

Ernst Conrad, Westfeld 13, 3101 Nienhagen, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,715
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020947
Int. Cl.³ B60D 1/00
U.S. Cl. 280—482 **21 Claims**



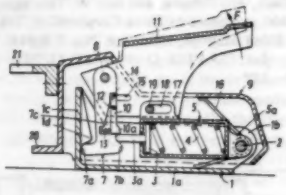
1. An adjustable upper link of a three-point suspension device for a tractor having a seat, said link comprising a double-acting hydraulic cylinder, a piston reciprocable in said cylinder and having a piston rod extending from the cylinder, coupling means on said piston rod and on an end of said cylinder opposite said piston rod, a hydraulic line connecting opposite end portions of said cylinder with one another, a shut-off valve in said line comprising a rotatable valve member having a shaft, an actuating lever fixed on said shaft and operable by an operator on the tractor seat, spring means acting on said lever to bias said valve to closed position and means for releasably holding said lever in open position of said valve comprising catch means engageable with said lever upon movement of said lever a predetermined distance in a direction to open said valve to hold said lever in open position and means for releasing said lever from said catch means upon further movement of said lever in said direction.

4,475,742

SAFETY SKI BINDING

Helmut Bauer, and Erwin Krob, both of Wien, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Feb. 2, 1982, Ser. No. 345,110
Claims priority, application Austria, Feb. 4, 1981, 502/81
Int. Cl.³ A63C 9/08
U.S. Cl. 280—632 **29 Claims**



1. A safety ski binding, comprising: a bearing block having a locking projection on an inner side of a front part thereof; a binding housing which has sole down-holding means thereon, which is pivotally biased by a spring, and which is supported on the bearing block for pivotal movement about a horizontal transverse first axis; a locking part pivotally supported on the binding housing and having a cam thereon; a spring housing which is supported pivotally on the bearing block, which has a locking member movably supported thereon, and which has a locking spring which urges the locking member against the locking part so that the cam on the locking part is urged against the locking projection on the front part of the bearing block; and a release lever which is pivotally supported on the binding housing and adapted to effect a voluntary release of the binding; the improvement comprising wherein the spring housing is constructed as a cylinder; wherein a piston is axially movably

supported in said cylinder, is secured against swivelling with respect to the spring housing about an axis parallel to the first axis, and has a piston rod which projects axially from the cylinder and is the locking member; and including coupling means for releasably locking an outer end of the piston rod against sliding movement in a direction along a surface on the locking part, the coupling means being manually releasable by means of the release lever.

4,475,743

HEEL HOLDER

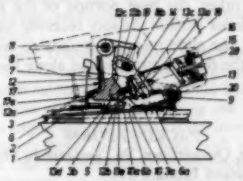
Heinz Wittmann, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Aug. 19, 1982, Ser. No. 409,480

Claims priority, application Austria, Aug. 21, 1981, 3661/81

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—632 **9 Claims**



1. In a heel holder for a safety ski binding, including a guide rail adapted to be secured to a ski and a base plate which is supported for movement against the force of a thrust spring on said guide rail and carries a bearing block on which a sole holder is pivotally supported, said sole holder being releasably held in a downhill skiing position by releasable locking means which includes a pawl which is movably supported on said sole holder, said pawl having one side which engages a control surface provided on said bearing block and being engaged on its other side by means which includes a release spring supported on a pivotally supported spring housing, said release spring biasing said pawl toward said control surface, the improvement comprising a control part which is supported on an abutment which is supported on said guide rail and supports one end of said thrust spring, and said control part extending upwardly through a recess provided in said base plate and, during movement of said base plate relative to said guide rail by said thrust spring when said locking means is releasably holding said sole holder in said downhill skiing position, engaging said spring housing and moving it so as to substantially interrupt the biasing force exerted by said release spring on said pawl.

4,475,744

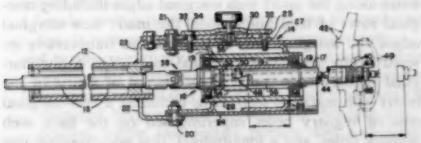
TELESCOPING STEERING SHAFT WITH ADJUSTED LASH

Donald C. Leutz, Coldwater, Mich., assignor to Douglas Components Corporation, Bronson, Mich.

Filed May 27, 1983, Ser. No. 498,759

Int. Cl.³ B62D *1/18*

U.S. Cl. 280—775 **9 Claims**



1. An adjustable steering column for a vehicle comprising an upper column portion, an upper steering shaft portion rotatably mounted within the upper column portion, said upper steering shaft portion including upper and lower sub-portions at least one of which is a quill shaft, said sub-portions being associated in telescoping relationship with one being the outermost of the two and the other the innermost, steering wheel mounting means at the upper end of the upper telescoping sub-portion, a manually rotatable control rod mounted in and extending through the upper sub-portion and having manually drivable rotation means at its upper end and screw threads adjacent its lower end, an inclined first cam surface at an end of the innermost of the sub-portions, a wedge plug telescoped within the outermost of said sub-portions, the wedge plug having an inclined second cam surface engageable with the first cam surface whereby axial shifting of the wedge plug in a locking direction with respect to the said innermost sub-portion forces the inclined first and second cam surfaces together to force the plug and said innermost sub-portion into locking engagement with said outermost sub-portion, and axial shifting of the wedge plug in a releasing direction with respect to said innermost sub-portion releases said locking engagement, the wedge plug and said innermost sub-portion surrounding the lower end of the rotatable control rod with one of them threadedly engaged with the control rod for axial shifting of the wedge plug and innermost sub-portion, relative to each other and in response to rotation of the rod, in directions for respective locking and releasing movement, first stop means for stopping the rotatable control rod and the one of said innermost sub-portion and wedge plug that is not threadedly engaged with the control rod against relative axial movement in one direction, second stop means for stopping said control rod and said one of said elements against relative axial movement in the opposite direction, said first and second stop means allowing a limited axial lost motion between said rotatable control rod and said one element when the direction of rotation of said rotatable control rod is reversed so as to axially disengage one of said stop means and move the rod axially toward engagement of the other of said stop means, said first and second stop means including respectively an axially upwardly facing first shoulder associated with the upper end of said one element and an axially downwardly facing second shoulder associated with a lower part of said one element, said first and second stop means further including respectively a first shoulder-engaging means mechanically tied to said rotatable control rod and associated with the upper end of said one element for engagement with said first shoulder and a second shoulder-engaging means mechanically tied to said rotatable control rod and associated with the said lower part of said one element for engagement with said second shoulder, and take-up means associated with said control rod and one of said first and second shoulder-engaging means for adjusting the axial distance between said first and second shoulder engaging means to thereby predetermine the degree of limited axial lost motion between the rotatable control rod and said one element allowed by said first and second stop means.

4,475,745

SEAT BELT DRIVE DEVICE

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,073

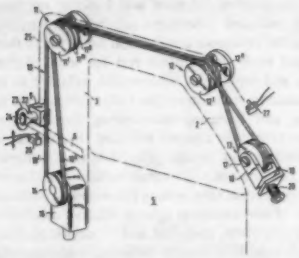
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1981, 3136336

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **4 Claims**

1. An apparatus for moving one end of a seat belt between a release position in which the one end of the seat belt is located toward the front of the vehicle to facilitate movement of a person into and out of a vehicle and a retaining position in which the one end of the seat belt is located toward the rear of the vehicle to position the seat belt in an orientation in which it can be effective to restrain a person against movement relative to the vehicle, said apparatus comprising a cable forming a closed loop which has a first end portion located toward the rear of the vehicle and a second end portion located toward the

front of the vehicle, a plurality of rollers disposed in engagement with said cable for guiding movement of said cable along a path having a generally horizontal main section which extends along an upper portion of a vehicle doorway, a rearward section which extends downwardly from a rearward end of the main section to a first one of said plurality of rollers, and a forward section which extends downwardly from a forward end of the main section to a second one of said plurality of rollers, said first roller being disposed in engagement with the first end portion of the closed loop formed by said cable and said second roller being disposed in engagement with the second end portion of the closed loop formed by said cable, connector means for use in connecting the one end of the seat belt to said cable, spring means connected with one of said first and second rollers for applying a biasing force against said one of said rollers to urge said one of said rollers away from the main section of the path to thereby tension the cable, drive



means for rotating one of said first and second rollers to move said cable along the path, said drive means being operable in a first direction to move said connector means upwardly from a position in which the seat belt is in the retaining position along at least a portion of the rearward section of the path, to then move said connector means along the main section of the path, and to then move said connector means downwardly along at least a portion of the forward section of the path to a position in which the seat belt is in the release position, said drive means being operable in a second direction to move said connector means upwardly from the position in which the seat belt is in the release position along at least a portion of the forward section of the path, to then move said connector means along the main section of the path, and to then move said connector means downwardly along at least a portion of the rearward section of the path to a position in which the seat belt is in the retaining position.

4,475,746

SEAT OCCUPANT RESTRAINING STRAP OF VEHICULAR SEAT BELT ARRANGEMENT

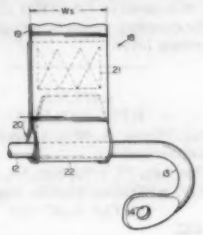
Yoshinori Akiyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 28, 1982, Ser. No. 426,168
Claims priority, application Japan, Oct. 22, 1981, 56-169205
Int. Cl.³ A62B *35/02*
U.S. Cl. 280—808 **11 Claims**

1. In a seat belt arrangement for an automotive vehicle having a vehicle body structure including a floor panel, the combination of an anchor bar which longitudinally extends in a fore-and-aft direction of the vehicle body structure and which is fixedly located adjacent a side end of the floor panel of the vehicle body structure, the anchor bar having a front end portion arcuately curved downwardly, and a restraining strap which is spliced at one end thereof to said anchor bar, the restraining strap comprising,

an elongated flexible strip having an end portion turned back and joined to an adjacent portion of the strip and forming a loop portion adjacent the joined overlapping portions of the flexible strip; and

a protective slide member received in said loop portion of said flexible strip and having a substantially semi-cylindrical base portion and a pair of wall portions extending from the base portion and spaced apart substantially in parallel



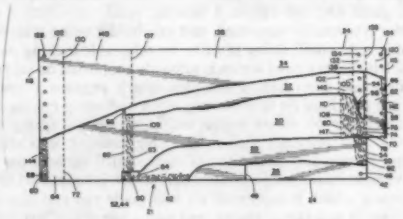
from each other, the base portion of the slide member having its inner surface slidably received on said anchor bar so that the slide member is slidable with said loop portion of the flexible strip on and along the anchor bar.

4,475,747

PACKING FORM

Robert E. Ashby, Quakertown, Pa., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,530
Int. Cl.³ B41L *1/20, 1/26*
U.S. Cl. 282—11.5 A **3 Claims**



1. An improved, continuous business form assembly providing product packing slips in adhesive-backed envelopes, and corresponding records of the packing slips, adapted to be fed through automatic printing means for simultaneous printing of the packing slips of the envelopes, and the corresponding records, comprising:

a longitudinally continuous back web having opposed marginal edges, a transverse width, a marginal row of registry holes along a first of the marginal edges, a front, and longitudinally spaced, transverse lines of perforations extending between the marginal edges, the web forming product packing slip envelope back panels;

a longitudinally continuous insert web superimposed over the back web, having opposed marginal edges outward of the back web marginal edges, a transverse width substantially greater than the back web width, marginal feed strips along the insert web marginal edges including marginal rows of feed holes along the insert web marginal edges and marginal lines of perforations transversely inward of the insert web marginal feed holes, a non-marginal registry strip transversely inward of a first of the insert web marginal feed strips including a non-marginal row of registry holes superimposed on the back web registry holes, and a longitudinal, first non-marginal line of perforations transversely inward of the insert web non-marginal registry holes and one of the back web marginal edges, a longitudinal, second non-marginal line of perforations transversely inward of the first non-mar-

ginal perforations, a longitudinal, third non-marginal line of perforations transversely outward of the second of the back web marginal edges, a longitudinal, fourth non-marginal line of perforations transversely inward of the second, back web marginal edge, longitudinally spaced, transverse die cuts extending between the first insert web marginal perforations and the third non-marginal perforations, and superimposed over portions of the back web transverse perforations, longitudinally spaced, transverse lines of perforations between the insert web marginal edges and the die cuts superimposed on portions of the back web transverse perforations, a face and a back, the insert web forming product packing slips between the insert web second and third non-marginal perforations and the die cuts, the slips superimposed over the back web packing slip envelope back panels;

a first set of longitudinal lines of adhesive joining the insert web back to the back web face, one such adhesive line being transversely inward of the third non-marginal perforations and another such adhesive line being between the first marginal perforations and the first non-marginal perforations;

a longitudinally continuous front web superimposed over the insert web, having opposed marginal edges, a transverse width substantially equal to the back web width, a marginal row of registry holes along one of the front web marginal edges, superimposed on the insert web non-marginal registry holes and the back web registry holes, a marginal line of perforations transversely inward of the front web registry holes and transversely outward of the first non-marginal perforations, a longitudinally extending, non-marginal line of perforations transversely inward of the front web marginal perforations and transversely inward of the second non-marginal perforations of the insert web, a face, a back, longitudinally spaced, transverse lines of perforations superimposed on the back web and insert web transverse perforations, the front web forming product packing slip envelope front panels superimposed over the insert web packing slips and the back web packing slip back panels; and

a second set of longitudinal and longitudinally spaced, transverse lines of adhesive joining the front web back to the insert and back web faces, one such longitudinal line being transversely outward of the insert web first non-marginal perforations, another of such longitudinal adhesive lines being transversely between the insert web first and second non-marginal perforations and a third such longitudinal adhesive line being transversely between the insert web third and fourth non-marginal perforations, the transverse adhesive lines being longitudinally adjacent in both longitudinal directions the transverse perforations of the back and front webs in the area of the die cuts.

4,475,748

COUPLING DEVICE

Kjell R. Ekman, Schanz 10, CH-6300 Zug, Switzerland

Filed May 26, 1981, Ser. No. 267,318

Claims priority, application Sweden, Jun. 6, 1980, 8004243

Int. Cl.³ F16L *35/00*

U.S. Cl. 285—3 **32 Claims**

19. A coupling device comprising:

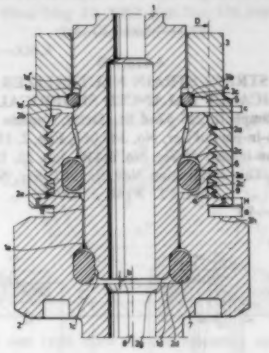
a male portion;

a female portion, said male portion being inserted into said female portion to provide a continuous conduit;

seal means operatively associated with said male and female portions for providing a fluid tight seal therebetween;

locking means rotatably mounted on said male portion and extended between said portions, for holding said male portion within said female portion and a locking ring captured between said locking means and said male portion to prevent mutual pulling apart movements among said male and female portions and said locking means; and

means, comprising a deformable member operatively associated with said female portion, for opposing movement of said locking means to a position in which both said male and female portions are held by said locking means in engagement with said seal means until sufficient force is applied by said locking means to overcome abruptly said



means for opposing, said deformable member being deformed by said locking means when said sufficient force has been applied, whereby said locking means can move to said position.

4,475,749

FLANGE COUPLING

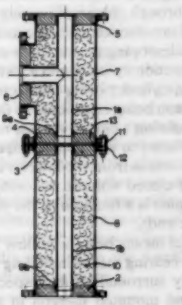
Gerhard Pforr, Ludwigshafen; Max Appl, Dannstadt-Schauernheim; Erfried Voelkl, Frankenthal; Hans Stark, Bobenheim-Roxheim, and Gerhard Peschau, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 25, 1981, Ser. No. 305,911

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037666

Int. Cl.³ F16L *59/12*

U.S. Cl. 285—47 **6 Claims**



1. A flange coupling structure for joining together the ends of multi-layer apparatus sections or pipeline sections, in which corrosive and hot gases are handled, each section consisting of an inner lining of glass which is resistant to thermal shock, or of quartz, said inner lining having at least two open ends and being surrounded by an outer metal jacket, the interspace between the outer jacket and the lining being packed with a heat-insulating material, said coupling comprising:

(a) refractory bricks at the end portions of said lining between the lining and the outer jacket said bricks surrounding without touching the entire surface of the lining at said end portions thereof,

(b) the lining, at one or both ends, does not terminate flush with the refractory bricks,

(c) the refractory bricks surrounding the lining terminate at least substantially flush with the surrounding outer jacket, and

(d) flange means at each end for coupling together the adjacent ends of the jackets of two adjacent sections of apparatus.

4,475,750

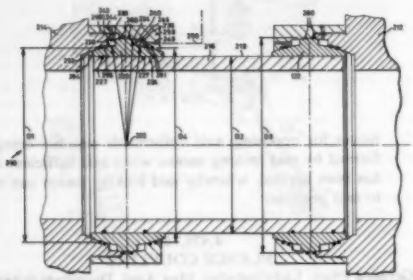
PIPE STRESS/STRAIN NEUTRALIZER WITH HYDRAULICALLY BALANCED SPHERICAL ELEMENT

Joseph K. Campbell, 215-52nd St., Delta, Canada (V4M 2Y3)

Continuation-in-part of Ser. No. 345,063, Feb. 2, 1982, , which is a continuation-in-part of Ser. No. 6,439, Jan. 25, 1979, Pat. No. 4,317,586. This application Nov. 5, 1982, Ser. No. 439,349

Int. Cl.³ F16L *27/00*

U.S. Cl. 285—95 **5 Claims**



1. A pipe joint between a first pipe end and a second pipe end, the pipe joint comprising:

telescoping means allowing the pipe ends to move axially with respect to each other while maintaining fluid-tight communication between them, the telescoping means including generally cylindrical means which at either end is in fluid-tight, articulable connection with a respective pipe end through spherical bearing means,

a plurality of contraction units located exteriorly of the pipe ends and telescoping means, each contraction unit including a contraction cylinder and a piston in said cylinder, the contraction cylinder being connected to the first pipe end and the piston being connected to the second pipe end, the cylinder defining a closed volume on the side of the piston which is closest to said second pipe end,

fluid conduit means from the interior of one of the pipe ends to the said closed volume, whereby the pressure in said closed volume is a function of the pressure inside said one of the pipe ends,

the cylindrical means being a hollow main cylinder,

the spherical bearing means including a ring member snugly but slidably surrounding its respective end of the main cylinder and mounted thereon in a liquid-tight manner, the ring member having male spherical surface means with its centre of curvature located on the axis of the main cylinder, and mating with female spherical seat means on the respective pipe end, the fluid within the pipe ends having direct access to part of the ring member adjacent its respective pipe end and thus exerting a first axial force on the ring member in the direction away from the respective pipe end, and further fluid conduit means from the interior of one of the pipe ends to a part of the ring member remote from its respective pipe end and thus exerting a second axial force on the ring member in the direction toward the respective pipe end, the axial projections of the areas of said parts of the ring member being such as to make said first and second axial forces substantially identical, whereby the ring member is in hydraulic balance.

4,475,751

COUPLER

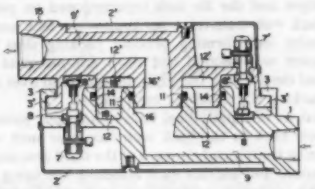
Kyoshin Nishimura, Saitama, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,426

Claims priority, application Japan, Mar. 12, 1980, 55-31031[U]

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—131 **1 Claim**



1. A coupler which comprises:

a female coupling member;

a male coupling member adapted to be fitted in said female coupling member;

a first air conduit formed in said female coupling member;

a second air conduit formed in said male coupling member and adapted to communicate with said first air conduit;

a first groove formed on said female coupling member at a position outside of said first air conduit;

a second groove formed on said male coupling member at a position outside of said second air conduit;

a third air conduit in said female coupling member communicating with said first groove;

a fourth air conduit in said male coupling member communicating with said second groove, said first groove being defined by an outer wall formed on said female coupling member at a position outside of the opening of said first air conduit and a side wall thereof;

said second groove being defined by an outer wall formed on said male coupling member at a position outside of the opening of said second air conduit and a side wall thereof;

said outer wall of said second groove being in contact with said outer wall of said first groove;

said sidewall of said second air conduit being in contact with said sidewall of said first air conduit;

a first O-ring disposed between the outer wall of the first groove and the outer wall of the second groove; and

a second O-ring disposed between the sidewall of the first air conduit and the sidewall of the second air conduit so that said first and second O-rings provide a complete isolating and sealing action for said first and second conduits and for said third and fourth conduits.

4,475,752

OVERHEAD PANEL LATCH

Patrick M. McKenna, Mukilteo, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 6, 1981, Ser. No. 290,465

Int. Cl.³ E05C *3/16*

U.S. Cl. 292—210 **3 Claims**

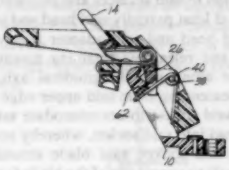
1. Latching apparatus for securing a panel within a provided opening in housing structure, comprising:

a base portion adapted to be affixed to said panel and having a stepped surface provided thereon;

a cam having a foot portion and an arm portion, said cam being pivotally mounted to said base portion such that the cam is pivotal to a latched position wherein said foot extends from said base for engaging said housing structure and securing said panel thereto, said cam also being pivotal to an unlatched position wherein said foot disengages from said housing structure to release said panel therefrom;

a trigger lever pivotally mounted to said cam, said trigger lever being pivotal such that one end thereof engages said stepped surface thereby causing the remaining end of such lever to engage said cam and bias the same to said unlatched position, said trigger lever further being actuable to release from support by said stepped surface such that said cam is free to pivot to said latched position; and

bias means tending to bias said trigger lever to said engaging position with the stepped surface.

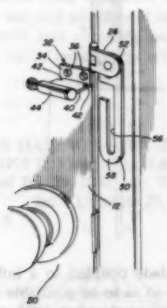


4,475,753

SAFETY DOOR LOCK

Philip O. D'Ath, 4146 Melrose St., Apt. 14, Riverside, Calif. 92504

Filed Oct. 20, 1981, Ser. No. 313,181
Int. Cl.³ E05C *17/16*
U.S. Cl. 292—268 **8 Claims**



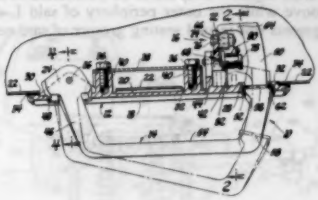
1. In combination with a vertical frame portion and an associated horizontally swingable closure member including a free edge portion swingable toward and away from the frame portion to close and open the closure member, respectively, a frame plate stationarily supported from said frame portion and a latch element stationarily supported from said closure member and including a latch portion projecting slightly outward from said free edge portion, a mount plate pivotally supported from said frame plate for oscillation relative thereto about a first axis paralleling said free edge portion, an elongated hasp pivotally supported at one end from said mount plate for oscillation about a second axis generally normal to said first axis, said hasp including a longitudinal slot formed therein, the end of said slot remote from the other end of said hasp including entrance means through which said latch portion is receivable into the adjacent end of said slot, said latch portion being slidable in and longitudinally of said slot, said latch portion of said latch element being supported from said closure member for extension and retraction relative to said free edge portion.

4,475,754

PULL OUT DOOR HANDLE ASSEMBLY

Alfonsas Arlauskas, Troy, and Algis G. Augunas, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 10, 1982, Ser. No. 376,398
Int. Cl.³ E05C *13/00*
U.S. Cl. 292—336.3 **2 Claims**



1. A pull out type door handle assembly comprising, in combination,

a mounting member,

a generally U-shaped operating handle located outwardly of the mounting member and having the legs thereof extending through apertures in the mounting member to the inner side thereof,

means pivotally mounting one leg of the handle to the mounting member,

cooperating engageable stop means on the other leg of the handle and the mounting member adjacent the aperture therethrough limiting rotational inward movement of the handle to locate the handle in inoperative position,

the other leg of the handle including a lateral extension located in spaced relation to the inner side of the mounting member,

a bell crank lever pivoted to the mounting member and located between the extension and the inner side of the mounting member,

means adapted to connect one leg of the lever to the release mechanism of a vehicle door lock,

resilient means rotatively biasing the bell crank lever relative to the mounting member to engage the other leg thereof with the lateral extension and rotate the operating handle inwardly of the mounting member to engage the cooperating stop means and locate the operating handle in inoperative position, the lateral extension rotating the bell crank lever against the action of the resilient means upon manual movement of the handle outwardly of the mounting member to operative position, the other leg of the bell crank lever being engageable with the inner side of the mounting member and the lateral extension in view of the location of said bell crank lever therebetween to limit outward movement of the handle and locate the handle and the bell crank lever in operative position.

4,475,755

APPARATUS AND METHOD FOR ASSEMBLY-DISASSEMBLY OF A SPRING LOADED HOOK

Jerry C. Patton, Broken Arrow, Okla., assignor to The Crosby Group, Inc., Tulsa, Okla.

Filed Sep. 24, 1982, Ser. No. 422,723
Int. Cl.³ B66C *1/34*; B23P *19/04*
U.S. Cl. 294—82 R **7 Claims**

1. A spring loaded hook assembly having a case having an opening in the bottom and top;

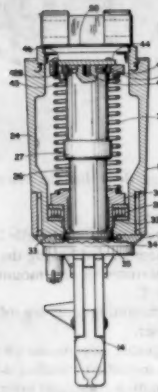
an integral hook and cylindrical shank which extends through said bottom opening within said case and is rotatably supported by a thrust bearing at the inside bottom of said case;

a compression coil spring co-axially supported about said shank in said case between said thrust bearing and a retainer assembly supported at the top of said shank;

said retainer assembly comprising a locking groove around the top of said shank;

a retainer ring having means to receive the top end of said spring, a seating groove in the inner periphery of said retainer ring;

a plurality of L-shaped ring segments, a lower horizontal leg of each segment adapted to be positioned in said locking groove while the outer periphery of said L-shaped ring segments rest in said seating groove of said retainer ring,



the compression of said spring holding the assembly locked in place;

a cap plate atop said shank and retainer assembly, said cap plate having threaded means to attach to said retainer ring in a first position atop said assembly for holding said L-shaped segments in said retainer assembly together and attached to said retainer ring in a second position spaced above said assembly to cause relative movement of said retainer ring to said shank for disassembly of said L-shaped segments from said retainer assembly; and

means to releasably and sealably close said top opening of said case.

4,475,756

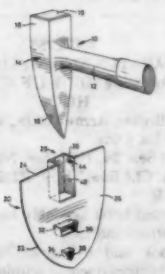
SHOVEL ADAPTER FOR HAND TOOL

Kenneth A. L. Reading, 11 Colborne St., Thornhill, Ontario, Canada L3T 1Z4

Filed May 28, 1982, Ser. No. 383,298

Int. Cl.³ A01B *1/20*

U.S. Cl. 294—51 **14 Claims**



1. An adapter for a hand tool having a haft and a head connected to said haft and extending generally transverse thereto, said adapter including a blade defined by a pair of spaced planar surfaces delimited by a pair of intersecting side edges and an upper edge, a socket formed on one of said surfaces to receive said head, said socket having a longitudinal axis generally parallel to said surfaces and including wall members to encompass at least partially said head and inhibit movement between said head and said adapter transverse to said longitudinal axis, and releasable retaining means to prevent relative movement along said longitudinal axis, said blade including a recess extending from said upper edge of the blade and aligned with said socket to accommodate said haft upon insertion of said head into said socket, whereby upon insertion of said head into said socket, said blade extends generally transverse to said haft to permit use of the blade for excavation.

4,475,757

SPADE

Gaston Glock, Siebenbürger Str. 16-26, A-1220 Vienna, Austria

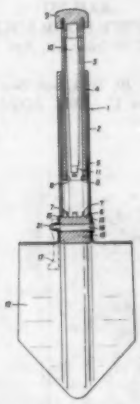
PCT No. PCT/AT81/00030, § 371 Date Aug. 6, 1982, § 102(e) Date Aug. 6, 1982, PCT Pub. No. WO82/01975, PCT Pub. Date Jun. 24, 1982

PCT Filed Dec. 9, 1981, Ser. No. 414,333

Claims priority, application Austria, Dec. 11, 1980, 6029/80

Int. Cl.³ A01B *1/22*

U.S. Cl. 294—51 **14 Claims**



1. Spade having a blade coupled to a hollow handle by means of a bearing pin so as to be pivotable and lockable in various positions, characterized in that said handle (1) has at its end (13) facing said blade (12) a plurality of surfaces (25 to 29) extending parallel to said bearing pin (16), wherein adjacent surfaces include an obtuse angle with one another, and wherein said bearing pin is constructed as an eccentric (18, 19, 20), and wherein, by rotating said eccentric by means of an actuating element fixed to said eccentric, said spade blade can be pressed against one of said surfaces.

4,475,758

LIFTING FORK

Hjalmar Paulsson, Pl. 1412, S-450 63 Högsäter, Sweden

Filed Apr. 27, 1982, Ser. No. 372,433

Claims priority, application Sweden, Apr. 27, 1981, 8102640

Int. Cl.³ B66C *1/24*

U.S. Cl. 294—67 AA **2 Claims**

1. A lifting fork adapted to be suspended from a lifting member and which is substantially U-shaped, where a multi-tined fork constitutes one shank of the U while the other shank of the U, constituted by a lifting shank, is adapted to receive a movable attachment means for said lifting member, and where

the intermediate portion of the U, extending between the two shanks, comprises a connecting bar, said lifting fork further comprising:

an axle arranged transversely to the fork close to the rear end thereof, at least part of said connecting bar being pivoted about said axle from an upright position perpendicular to the fork, to a position behind the fork;

a locking device for locking said part of said connecting bar to said upright position in a locking position of said locking device;

actuating means arranged proximally of the upper end of the connecting bar, said actuating means being arranged to release said locking device out of its locking position upon displacement of said attachment means along the lifting shank into engagement with said actuating means;

said locking device comprising a locking bar extending through the connecting bar and cooperating with a locking arm connected to the rear end of the fork, and said actuating means being connected to the upper part of the locking bar and said attachment means being arranged to cooperate with said actuating means for displacing the locking bar out of engagement with the locking arm.

4,475,759

PICKUP TRUCK HAVING A STREAMLINING TAILGATE

Jerry P. Wine, 1973 E. Vinedo La., Tempe, Ariz. 85284

Filed Jul. 29, 1982, Ser. No. 402,967
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—1 S **7 Claims**

1. An improved tailgate apparatus for use on a pickup truck, the pickup truck having a partially enclosed bed portion, said enclosure comprising two sides and a floor, the improved apparatus comprising:

a tailgate, said tailgate being adaptable for being rigidly and readily positioned in any of a plurality of positions with respect to the floor and positioned substantially between the sides of an after portion of the partially enclosed pickup bed, at least one of said plurality of positions being a closed position for providing closure of the after end of the pickup bed, and at least one open position allowing substantial air flow between the tailgate and the floor of the pickup bed to provide an airfoil effect at the after end of the pickup truck; and

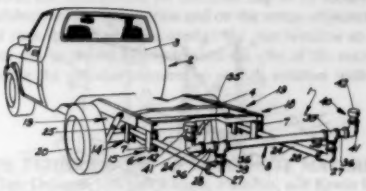
means for adjusting and holding said adaptable tailgate in each of said plurality of positions.

4,475,760

TRUCK BED EXTENSION ATTACHMENT

Robert L. Morgan, 15757 Eastwood Rd., Williamsburg, Ohio 45176

Filed Jun. 21, 1982, Ser. No. 390,206
Int. Cl.³ B62D *33/08*
U.S. Cl. 296—26 **2 Claims**



1. A truck extension attachment for enabling a truck having a truck bed frame to carry articles projecting from the rear of the truck comprises:

(a) an interior housing unit having two roller housings, each roller housing of the interior housing unit being mounted to the truck bed frame, each roller housing of the interior housing unit being positioned on opposite sides of a center line passing through the length of the truck;

(b) an exterior housing unit having two roller housings, the roller housings of the exterior housing unit being positioned on opposite sides of the center line of the truck, the exterior housing unit being positioned on the truck bed frame between the interior housing unit and the rear of the truck, each roller housing of the exterior housing unit being the same distance from the center line as the roller housing of the interior housing unit on the same side of the center line;

(c) a pair of vertically aligned rollers positioned within each roller housing of both the interior and exterior housing units, the rollers being composed of rubber, each roller being concave in shape, the rollers within each roller housing being vertically separated by a distance corresponding to the diameter of the retractable frame;

(d) two horizontally spaced parallel frame rods retractably positioned within the roller housings of both the interior and exterior housing units, each frame rod passing through a roller housing of the exterior housing unit and a roller housing of the interior housing unit, the frame rods being frictionally engaged by the rollers within each roller housing for preventing the undesired movement of the frame rods, each frame rod having an inner and outer end, in an operational position, the frame rods partially extend beyond the rear of the truck, in a storage position, the frame rods lie completely beneath the truck;

(e) a stopper positioned on the inner end of each frame rod for preventing the frame rod from coming completely out of the roller housing of the interior housing unit when the frame rods are in the operational position;

(f) an elbow tube attached to the outer end of each frame rod;

(g) a coupling bar joined to the end of the elbow tube not attached to the frame rod; and

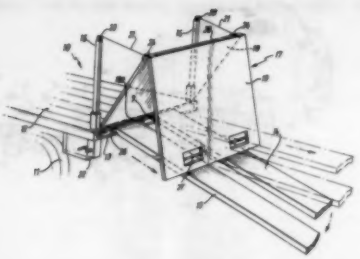
(h) a rear cross frame having three rear cross rods joined together by two tee bars to form a continuous rear cross frame, the bottom portion of each tee bar joined to a coupling bar for connecting the rear cross frame to the frame rods.

4,475,761

VEHICLE HAVING PIVOTABLE WALL PARTS

Anthony G. Milroy, 87 Station Rd., Cheadle Hulme, Cheadle, and Peter Woof, Old Dairy Cottage, Dent, Sedburgh Cumbria LA10 5S0, both of England

Filed May 13, 1982, Ser. No. 377,656
Claims priority, application United Kingdom, May 15, 1981, 8115031; May 15, 1981, 8115032; Oct. 15, 1981, 8131063
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—61 11 Claims



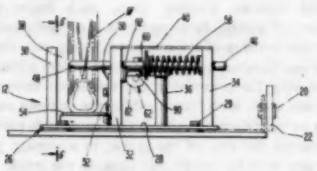
1. A vehicle comprising a body having a deck and a wall, a structure extending upwardly with respect to the deck at the ends of the wall, the wall comprising two parts, first pivot means connecting the wall parts and releasably cooperable with the structure, second pivot means for releasably connecting the deck and a lower edge portion of one wall part, third pivot means for releasably connecting an upper edge portion of the other wall part and said structure further from the deck than the first pivot means, so that on release of the first and third pivot means the wall can pivot on the second pivot means and on release of the first and second pivot means the wall can pivot on the third pivot means and on release of the second and third pivot means the wall can pivot on the first pivot means.

4,475,762

WHEEL CHAIR RESTRAINT SYSTEM

Arthur DeLong, Mertztown, and Prem M. Balani, Schillington, both of Pa., assignors to U.S. Seating Co., Inc., Topton, Pa.

Filed Feb. 24, 1982, Ser. No. 351,626
Int. Cl.³ B60N *1/08*; B60P *7/08*; B61D *45/00*
U.S. Cl. 296—65 R 8 Claims



1. A wheel chair restraint apparatus connectable to a support surface comprising:

frame means for mounting the wheel chair restraint apparatus on a support surface;

pin support means carried by said frame means for supporting and guiding movement of a lock pin;

a lock pin carried by said pin support means, said lock pin being movable between a retracted position spaced from a wheel of a wheel chair to be restrained and an engaged position in which the lock pin is engaged with the wheel to prevent movement thereof;

first biassing means for urging said lock pin into said engaged position;

lever means for moving said lock pin between said engaged position and said retracted position;

plate means movable into a locking position for holding said lock pin in said retracted position; and

second biassing means for urging said plate means into said blocking position, said plate means being engageable by the wheel to be restrained and being movable by the wheel into a release position so that said lock pin moves from said retracted position into said engaged position to thereby prevent movement of the wheel.

8. A wheel chair restraint system comprising:

a foldable seat having a seat back and a seat bottom, the seat bottom being connected to the seat back for movement about a pivot axis between a lowered position and a raised position;

a frame base connected to a lower surface of said seat bottom;

first and second parallel lock pin supports extending from said frame base, aligned bores being formed in said lock pin supports;

a lock pin received in said bores for movement between a retracted position and an engaged position in which said lock pin is supported by said lock pin supports and has a first end thereof protruding beyond said first lock pin support;

first spring means for urging said lock pin towards said engaged position;

lever means for moving said lock pin between said engaged position and said retracted position;

plate means secured to said first lock pin support for movement between a blocking position holding said lock pin in said retracted position and a release position spaced from the bore of said first lock pin support;

second spring means for urging said plate means towards said blocking position; and

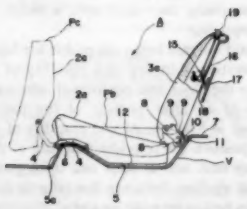
a guide plate extending from said frame base and cooperating with said first block pin support to define a space for receiving a wheel to be restrained, a portion of said plate means being positioned in said space in such manner that a wheel inserted into the space engages the plate means and moves the plate means into the release position thereof so that said lock pin moves into the engaged position thereof thereby restraining the wheel in the space, movement of said lever means returning said lock pin to said retracted position to thereby allow removal of the wheel from the space.

4,475,763

REAR SEAT ARRANGEMENT FOR MOTOR VEHICLE AND THE LIKE

Teruo Hamatani, and Kiyomi Okino, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 10, 1982, Ser. No. 387,213
Claims priority, application Japan, Jun. 11, 1981, 56-90634
Int. Cl.³ B60R *21/10*
U.S. Cl. 296—65 R 6 Claims



1. A rear seat arrangement for use in a motor vehicle and the

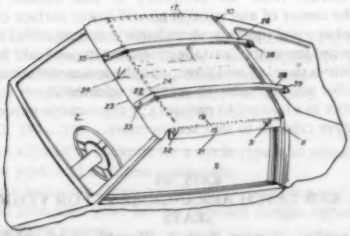
like which comprises a first seat and a second seat provided at a left side and a right side of the motor vehicle by dividing a sheet cushion member and a seat back member into corresponding two portions for said first and second seats, each of said first and second seats further comprising a seat cushion portion pivotally connected at its forward lower portion to a seat floor surface so as to be rotated for being erected at a forward position of said seat, about the pivotal connection at said forward, lower portion, and a seat back portion having a first pivot provided at its lower portion in a position higher than a surface of a load carrying platform at a rear portion of said seat, and pivotally connected to the seat floor surface so as to be rotatable for inclination in the forward direction through connecting members for guiding said first pivot to a position lower than the surface of said load carrying platform, the connecting members are each connected at a first end to the seat back portion and at a second end to the seat floor, respectively, the first end supporting the first pivot and the second end movably supported with respect to the seat floor, the connecting members permitting the first pivot to move from a position higher than the surface of the load carrying platform to a position lower than the surface of the load carrying platform, said divided first and second seats being respectively arranged to be independently changed over to an ordinary position wherein said cushion portion is held horizontal, with said seat back portion held in an erect state, so that the seat cushion portion and the seat back portion for one of said divided first and second seats may form the same continuous plane with respect to the sheet cushion portion and seat back portion for the other corresponding one of said first and second seats, and to a first folded position wherein the seat back portion is folded upon the upper surface of the seat cushion portion through rotation of said seat back portion about said first pivot for inclination thereof in the forward direction when said first pivot is located at a position higher than the surface of said load carrying platform, and also, to a second folded position wherein said seat cushion portion is erected through rotation thereof, about said pivotal connection, with said seat back portion being folded into a recess formed on the seat floor surface by the erection of said seat cushion portion, through rotation of said seat back portion by the movement of the connecting members, the first pivot is displaced to a position lower than the surface of said load carrying platform.

4,475,764

AUTOMOBILE COVER

Mark R. Hutchinson, 208 W. Third St., and David A. Parker, 2224 Carter Rd., both of Owensboro, Ky. 42301

Filed Feb. 23, 1983, Ser. No. 469,087
Int. Cl.³ B60J *7/10*
U.S. Cl. 296—136 **4 Claims**



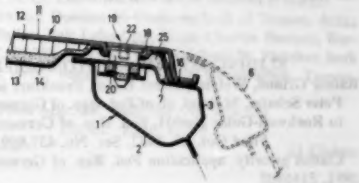
1. A cover for the top of an automobile, having a front window, opposed side windows, and a rear window, surrounding a passenger compartment of the automobile, where the top of the automobile provides removable, self supporting panels carried by a frame assembly in the top of the automobile above the passenger compartment where the edge of the frame adjoining the rear window of the automobile has a ledge to provide a joint between the removable covers, the frame supporting the removable covers, where the cover includes: a flexible sheet of material sized to cover the top of the automobile and includes front flap means located adjacent a front edge of said cover to extend downwardly over the windshield, opposed side flaps to encroach over the side windows, a rear edge carrying a flexible, compressible, generally circular cross section seal member, and strap means connected to the rear edge of the cover and extending outwardly therefrom, and suction cup means on the side flaps to be secured to the side windows of the automobile, on the front flap to be secured to the windshield of the automobile and on the straps adjacent the terminal ends thereof to be secured to the rear window so that the cover can be pulled tightly toward the rear of the automobile to urge the circular member to sealing relation with the ledge.

4,475,765

MOTOR VEHICLE ROOF OF COMPOSITE MATERIAL

Hans Vogt, Overath; Herbert Kloppe, Pulheim, and Erwin Spiegel, Bergheim, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1982, Ser. No. 452,668
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 3202594
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—210 **5 Claims**



1. A roof for a motor vehicle body in the form of a layered composite component which is produced in a hot pressing process and comprising an impermeable outer layer, an intermediate structural layer, a semi-rigid, porous layer positioned inwardly adjacent and supportively engaging the intermediate layer and a padding and/or decorative inner layer inwardly adjacent the semi-rigid layer, the continuous edge area of the roof being shaped by hot pressing deformation of all the layers to form joining flange areas of different cross-sections adapted to be jointed to areas of the frame rigid with the body by a permanently resilient, vibration-absorbing adhesive bead and by screw connections at strategic points proximate the bead.

4,475,766

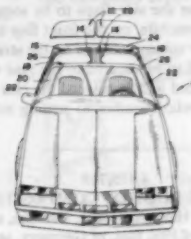
DRAINAGE SEAL FOR VEHICLE HAVING REMOVABLE ROOF PANELS

Gerald D. McKee, Highland, Mich., assignor to Cars & Concepts, Inc., Brighton, Mich.

Filed May 23, 1983, Ser. No. 497,147
Int. Cl.³ B60J *7/08*
U.S. Cl. 296—213 **8 Claims**

1. In a vehicle body including a front windshield header extending laterally with respect to the vehicle body, a pair of front pillars that respectively support opposite lateral ends of the windshield header, a rear roof portion that is spaced rearwardly from the windshield header and extends laterally with respect to the vehicle body, a pair of rear pillars that respectively support opposite lateral sides of the rear roof portion, a central strut that extends longitudinally between the windshield header and the rear roof portion to define a pair of roof openings, and a pair of removable roof panels for respectively closing the pair of roof openings, a pair of drainage seals respectively associated with the pair of roof openings and each

comprising: a one piece resilient seal member including front, roof, and rear seal portions; the front seal portion of the seal member extending along the associated front pillar and including a flap that defines a water drainage passage; the roof seal portion of the seal member including front, intermediate, and rear sections that cooperatively define a U shape extending around the associated roof opening and projecting upwardly to



engage and seal against the associated roof panel; the front section of the roof seal portion of the seal member being connected to the front seal portion of the seal member to direct water to the drainage passage thereof; and the rear seal portion of the seal member extending along the associated rear roof pillar and having an upper end connected to the rear section of the roof seal portion of the seal member.

4,475,767

SLIDING ROOF FOR AUTOMOBILES

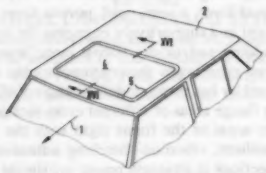
Rainer Grimm, Wetzlar; Horst Bohm, Frankfurt am Main, and Peter Schafer, Maintal, all of Fed. Rep. of Germany, assignors to Rockwell-Golde GmbH, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,669

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146905

Int. Cl.³ B60J *7/04*

U.S. Cl. 296—221 **20 Claims**



1. Sliding roof for automobiles comprising a raisable lid associated with a roof opening, which lid is pivotally journalled in the region of its forward edge about horizontal axis oriented transversely to the direction of travel, is slidably supported on lateral guide rails in the forward third of its length and is thereby displaceable in the raised position partly over the rear, fixed roof surface while maintaining its raised angle, a raising device consisting of a threaded telescopic device and participating in displacements being provided in the region of the support at each side of the lid, the threaded nut of which is connected in rotationally locked manner with a pinion coaxial therewith, which is in engagement with the threaded cable, displaceably mounted in tension and compression transmitting manner, of a drive device, characterized in that, for supporting the lid, on each side of the lid a slide rail engaging displaceably with the guide rail is provided, the forward end of which is pivotally connected to form the horizontal axis oriented transversely to the direction of travel with a raising lever, disposed in the direction of the slide rails, to which lever the lid is fixed, and at the rear end of which the threaded nut of the raising device is rotatably journalled about a vertical axis, the lifting element of the raising device being connected with the raising lever, and in that, on the slide rail, a coupling element is pivotally mounted, which is situated with actuation surfaces in the movement part of an entraining device connected with the threaded cable and, in the forward position of the lid, engages into a stationary blocking recess.

4,475,768

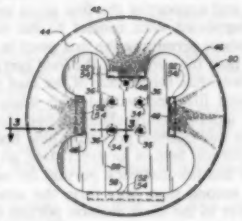
SEAT MEMBER WITH EXCHANGEABLE COVER

Ronald C. Webb, Red Lion, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Jun. 25, 1982, Ser. No. 392,403

Int. Cl.³ A47C *27/00*

U.S. Cl. 297—283 **2 Claims**



1. A seat member to support a human body and having substantially planar upper and lower surfaces of similar shape spaced apart a predetermined distance, and a continuous sidewall extending substantially perpendicularly between the perimeters of said upper and lower surfaces of said seat member, in combination with a plurality of similar covers respectively of different colors and/or texture from which a selection may be made to provide a desired texture and/or color for the outer surface of said seat member, said covers comprising a top and side panel similar in shape respectively to the upper surface and sidewall of said seat member and closely conforming thereto when mounted thereupon, a planar bottom panel of pliable sheet material and similar peripheral shape as said top panel and the periphery thereof being fixedly connected to the lower edge of said side panel of said cover, said bottom panel being formed with a plurality of connected openings generally in partial cloverleaf configuration and all edges of said openings being spaced from the periphery of said bottom panel to facilitate extending the cover over said seat member when mounting said cover thereto, said openings being shaped to define a plurality of circumferentially spaced fingers extending radially inward from the periphery of said bottom panel toward the center of and parallel to said lower surface of said seat member, and quickly detachable coengageable means being secured respectively to the innermost ends of said fingers of said bottom panel of said cover and the lower surface of said seat member and operable to secure a selected cover to said seat member in a manner to prevent any appreciable movement of said cover relative to said seat member.

4,475,769

HINGE AND LATCH ARRANGEMENT FOR VEHICLE SEATS

Ray V. Crawford, Warren; Regis V. Pilarski, Utica, and Robert J. Rumpf, Grosse Pointe, all of Mich., assignors to General Motors Corporation, Detroit, Mich. and The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jul. 23, 1982, Ser. No. 401,187

Int. Cl.³ B60N *1/10*

U.S. Cl. 297—331 **6 Claims**

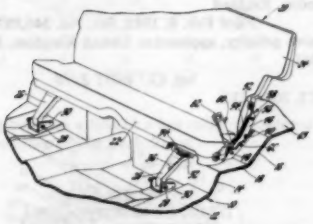
1. A seat back hinge and latch arrangement for mounting a vehicle seat including a tilting seat back to a vehicle comprising, in combination,

a pair of pivotally interconnected hinge members, one secured to the vehicle and the other secured to the seat back to mount the seat back on the vehicle for pivotal movement to a vertically inclined normal upright position, to a plurality of partially tilted positions, and to a generally horizontal fully tilted position,

means locating the other hinge member and seat back in the normal upright position,

a plurality of spaced teeth on the other hinge member arranged radially about the pivotal axis of the hinge members, one tooth corresponding to the normal upright position of the seat back and the other teeth each respectively corresponding to a partially tilted position of the seat back,

an inertia actuated pawl pivotally mounted on the one hinge member,



first means mounted on the seat back adjacent the pawl and operable under a gravity bias on the pawl to locate the pawl in a first position adjacent the rotative path of the teeth,

second means mounted on the seat back adjacent the pawl and automatically operable only in the normal upright position of the seat back to block operation of the first means and to positively hold the pawl in a second position in the path of the said one tooth for instantaneous engagement thereby upon the start of inertia actuated movement of the seat back toward a tilted position,

said second means being inoperative in each of the partially tilted positions of the seat back to permit operation of said first means to locate the pawl in the first position for inertia actuated movement into engagement with one of said other teeth to lock the seat back against further tilting movement.

4,475,770

ADJUSTABLE BACKREST FOR CYCLE TYPE SEAT

Charles Persons, II, Boca Raton, Fla., assignor to Persons-Majestic Manufacturing Co., Monroeville, Ohio

Filed Aug. 19, 1981, Ser. No. 294,372
Int. Cl.³ A47C *1/024*
U.S. Cl. 297—353 **13 Claims**

1. An adjustable backrest for a cycle-type seat mounted on a support post, said backrest comprising:

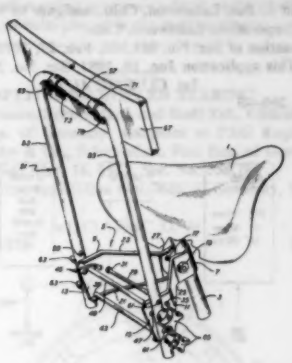
a yoke including clamping means for clamping said yoke to the post, said yoke having opposed flanges opposite said clamping means;

a support frame;

a back support;

pivot means for pivotally attaching said back support to said frame; and

adjustment means for selectably securing said support frame to said yoke to adjustably fix the height and angle of said back support with respect to said yoke; said adjustment means including a pair of apertures in each of said flanges and a plurality of pairs of apertures in said support frame alignable with said apertures in said flanges for selectably adjusting the height of said back support with respect to



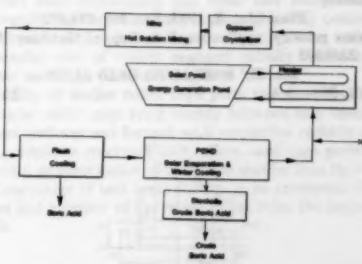
said yoke, and locking means for locking said aligned apertures in alignment.

4,475,771

CYCLIC SOLUTION MINING OF BORATE ORES

George E. Atwood; Douglas E. Cochran, both of Tucson, Ariz.; Abraham Sadan, Salt Lake City, Utah; Charles Burnett, Barstow, Calif.; Phillip O. Tyree, and Archibald W. Fletcher, both of Tucson, Ariz., assignors to Duval Corporation, Tucson, Ariz.

Filed Mar. 28, 1983, Ser. No. 479,239
Int. Cl.³ E21C *41/14*
U.S. Cl. 299—4 **22 Claims**



1. A method of recovering boric acid from a subterranean deposit of colemanite ore by solution mining, comprising:

supplying a leach solution comprising hydrochloric acid to the subterranean deposit via an injection well in communication therewith, whereby colemanite ore is dissolved and an aqueous pregnant solution of boric acid and calcium chloride is formed in the deposit;

withdrawing the pregnant solution of boric acid and calcium chloride from said deposit via a production well in communication therewith;

separating boric acid from the withdrawn solution;

adding sulfuric acid to the resultant concentrated solution from which boric acid has been separated, whereby hydrochloric acid is regenerated therein and $CaSO_4.2H_2O$ is formed;

separating $CaSO_4.2H_2O$ from the resultant solution containing regenerated hydrochloric acid thereby forming a regenerated leach solution; and

recycling the regenerated leach solution to the subterranean deposit of colemanite via an injection well.

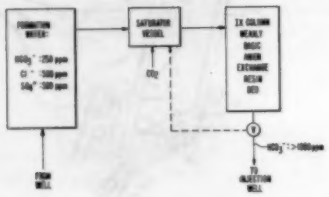
4,475,772
PROCESS FOR RECOVERING URANIUM AND OTHER BASE METALS

Raymond J. Jan, Lakewood, Colo., assignor to Wyoming Mineral Corporation, Lakewood, Colo.

Continuation of Ser. No. 881,955, Feb. 27, 1978, abandoned. This application Jun. 18, 1981, Ser. No. 275,536

Int. Cl.³ E21C *41/14*

U.S. Cl. 299—5 **25 Claims**



20. In the method of mining uranium in an underground zone wherein a bicarbonate leach solution is injected into the zone and withdrawn from said zone with an increased concentration of other anions such as sulfate, chloride and nitrate anions, the improvement comprising contacting the withdrawn solution with an anion exchange resin in bicarbonate form so that said other anions are exchanged.

4,475,773
STEERING-BRAKE CONTROL ARRANGEMENT FOR A VEHICLE BRAKE SYSTEM

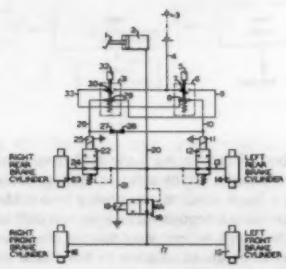
Peter Bartscher, Hanover; Harald Meyer, Garbsen, and Diether Staisch, Walsrode, all of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 8, 1983, Ser. No. 473,372

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208393

Int. Cl.³ B60T *11/10*; B62D *11/08*

U.S. Cl. 303—6 A **11 Claims**



1. A steering-brake control system for a vehicle comprising:

(a) right and left wheel brake cylinders of at least one axle of said vehicle;

(b) a master cylinder providing a source of fluid pressure to effect operation of said wheel cylinders;

(c) first valve means for normally establishing fluid pressure communication between said master cylinder and each of said right and left wheel brake cylinders in an actuated condition thereof, and for cutting off said fluid pressure communication with one of said left and right wheel brake cylinders in an actuated condition of said first valve means;

(d) first and second switch means for establishing said actuated condition of said first valve means;

(e) right and left brake pedals selectively arranged to operate either jointly or independently of each other and to concurrently operate said master cylinder, said right and left brake pedals being further arranged to operate respective ones of said first and second switch means, whereby operation of either one of said independently arranged brake pedals establishes said actuated condition of said first valve means; and

(f) means for maintaining said first valve means in a deactuated condition when said right and left brake pedals are both operated.

4,475,774
VEHICLE BRAKING SYSTEMS

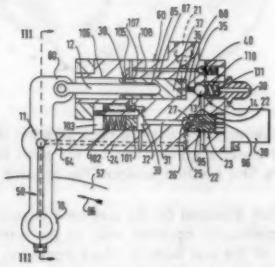
John W. Davis, Coventry, England, assignor to Dunlop Limited, London, England

Filed Feb. 8, 1982, Ser. No. 346,887

Claims priority, application United Kingdom, Feb. 21, 1981, 8105561

Int. Cl.³ B60T *8/10*

U.S. Cl. 303—112 **23 Claims**



1. An anti-skid system for a vehicle brake comprising a skid-sensing device for detecting an excessive rate of deceleration of a wheel, means connected between a main wheel brake and the skid-sensing device for effecting release of said main wheel brake when an excessive rate of deceleration of the wheel occurs and operably connected to govern re-application of said main wheel brake and a pilot brake positioned to be activated by brake torque reaction and connected to supply operating power for the system.

4,475,775
BULLDOZER TRACK SUPPORT ROLLER ARRANGEMENT

Nicolae V. Orlandea, Davenport; Ray C. Huang, Bettendorf, both of Iowa; Bernard E. Romig, Illinois City, and Jack C. Wiley, Moline, both of Ill., assignors to Deere & Company, Moline, Ill.

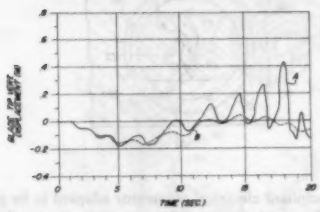
Filed Nov. 29, 1982, Ser. No. 445,320

Int. Cl.³ B60D *55/14*

U.S. Cl. 305—28 **5 Claims**

1. In a bulldozer including a longitudinally extending main frame, a dozer blade mounted for operation forwardly of the main frame, a pair of track assemblies coupled to and extending longitudinally at opposite sides of the main frame, each track assembly including a longitudinally extending track frame carrying an idler wheel at its forward end in alignment with a final drive sprocket mounted to the frame at a location adjacent the rearward end of the track frame, a plurality of track support rollers fixed relative to and mounted at spaced locations along the track frame, and an endless track being received

about the idler wheel and sprocket, the improvement comprising: said rollers having lowermost points located on an arched



line extending between a first to a last roller considered from one end to the other of the track frame.

4,475,776

LINEAR SLIDE BEARING

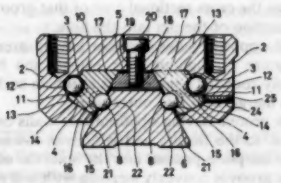
Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-chome, Setagaya-ku, Tokyo 158, Japan

Filed Mar. 17, 1983, Ser. No. 476,144

Claims priority, application Japan, Mar. 19, 1982, 57-42583

Int. Cl.³ F16C *29/06, 29/04*

U.S. Cl. 308—6 C **4 Claims**



1. A linear slide bearing comprising: a slide table, formed into the shape of a letter "C" in cross section having a central inner side and a pair of arms, the slide table having a horizontal surface at the central inner side of the slide table and recesses formed on inner sides of the arms, the recesses having inclined surfaces on an upper part of the arms, the slide table having no-load ball guide grooves formed in the inclined surfaces; a pair of bearing races fitted into the recesses, the bearing races having no-load ball guide grooves formed in surfaces facing the inclined surface of the slide table and load ball grooves formed in opposite surfaces; a fixing member trapezoidal in cross section having inclined surfaces in pressure contact with inclined surfaces of the bearing races having the load ball grooves, the fixing member having screw holes formed at a central portion at certain intervals in a longitudinal direction, the fixing member being drawn upward by a bolt which passes through a central portion of the slide table and screwing into the screw hole formed in the fixing member, the inclined surfaces of the fixing member being pressed against the inclined surfaces of the bearing races as the bolt is tightened, thereby securing the bearing races in the recesses of the slide table; a guide rail trapezoidal in cross section fitted into a space formed by the fixing member and the bearing races, the guide rail having a ball-rotating groove in the inclined surfaces facing the bearing race inclined surfaces; guide covers having a guide groove and mounted to front and rear ends of the slide table to connect both ends of the no-load ball guide grooves, load ball grooves and ball-rotating grooves to form endless ball tracks; and a number of balls placed in the endless tracks.

4,475,777

SPLIT-RING ROLLER BEARING

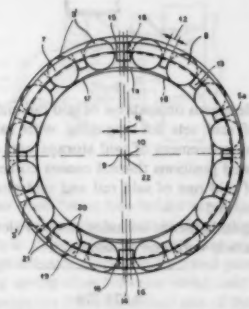
Heinrich Hofmann, Schweinfurt, and Rudi Eck, Gädheim, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Mar. 16, 1982, Ser. No. 358,781

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112303

Int. Cl.³ F16C *33/46*

U.S. Cl. 384—572 **5 Claims**



1. A split roller bearing comprising:

an inner race having a radially outwardly directed inner race surface centered on an axis;

an outer race surrounding said inner race and having an inwardly directed outer race surface generally concentric with said inner race surface;

an annular row of rollers engaged radially between said inner and outer race surfaces; and

a plurality of similar roller cage parts together forming an annular roller cage lying mainly between said inner and outer surfaces and formed with respective radially opening windows receiving said rollers, said cage parts each having an inner radius of curvature smaller than the radius of curvature of said inner surface in an unstressed condition and a center of curvature offset from the inner-race axis.

4,475,778

DRAWER SUSPENSION SYSTEM

Forest G. Stark, Jamestown, N.Y., assignor to AVM Corporation, Jamestown, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,453

Int. Cl.³ A47B *88/10*

U.S. Cl. 312—330 R **14 Claims**

1. A drawer suspension assembly, comprising:

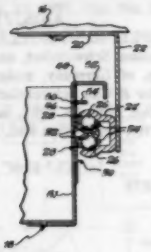
two spaced sets of horizontally disposed elongated rails and channels, wherein each of said sets has its rail at least partially projecting into its channel;

a linear bearing assembly for mounting and supporting one of said rail and said channel of each of said sets for linear movement with respect to the other of said rail and channel of each of said sets, said bearing assembly engaging with a pair of races formed one race as part of said rail and the other race as part of said channel of each of said sets;

a constraining means for constraining the other of said rail and said channel of each of said sets against movement;

a support means on said one of said rail and said channel of each of said sets to permit a storage unit having flanges

and lugs projecting laterally from opposite sidewalls thereof to be gravity supported thereon, said support means comprising a longitudinally extending upright extending upwardly from said one of said rail and said channel and terminating in an upper support edge for coaction with one of said flanges;



engageable means on said one of said rail and said channel of each of said sets for engaging with said storage unit, whereby movement of said storage unit towards opened and closed positions thereof causes corresponding movement of said one of said rail and said channel of each of said sets, and

said engageable means includes an open slot in said upright for coaction with one of said lugs.

4,475,779

ROTARY ELECTRICAL CONNECTION

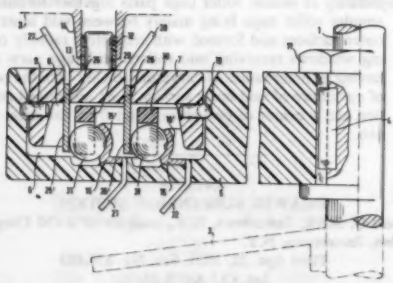
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,528

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110815

Int. Cl.³ H01R *39/00*

U.S. Cl. 339—5 M **4 Claims**



1. An apparatus comprising a housing having a movable section and a stationary section, a first circular contact ring formed of an electrically conductive material and connected to said movable section of said housing, a second circular contact ring formed of an electrically conductive material and connected to said stationary section of said housing, and a series of rotatable bodies disposed in an annular array between said first and second contact rings and formed of an electrically conductive material, one of said contact rings being resiliently deflected to a noncircular configuration by engagement with said rotatable bodies to enable said one contact ring to continuously press said rotatable bodies against the other contact ring with a force which is substantially constant throughout the extent of the annular array of rotatable bodies.

4,475,780

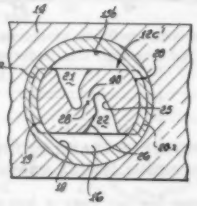
COMPLIANT ELECTRICAL CONNECTOR

Leo Walter, Palos Verdes Peninsula, and Helmut W. Greul, Rolling Hills Estates, both of Calif., assignors to Buckbee-Mears Company, St. Paul, Minn.

Filed Apr. 16, 1982, Ser. No. 369,170

Int. Cl.³ H05K *1/04*

U.S. Cl. 339—17 C **14 Claims**



1. In a compliant electrical connector adapted to be pressed into a hole formed by surrounding structure, the combination comprising

(a) an axially elongated pin having two opposite outer surfaces operable to forcibly grip said structure at the boundary of the hole as the pin is inserted into the hole, the pin also having opposite generally parallel outer sides,

(b) the pin having first and second elongated grooves respectively sunk in said opposite sides thereof, the grooves extending axially of the pin and configured to locally weaken the pin so that at least one flexure is formed by the pin to extend axially thereof between and adjacent the grooves and along the groove length,

(c) the flexure adapted to yieldably flex in response to insertion of the pin into the hole and progressive gripping of said structure by said opposite outer surfaces, thereby to reduce the cross sectional area of that groove in response to insertion of the pin into the hole,

(d) said opposite outer surfaces having arcuately convex curvature throughout their extents and between more sharply rounded edge extents at which said opposite surfaces merge with said outer sides,

(e) each groove having opposite side walls one of which is closest to the flexure and is convex toward the groove when the pin is pressed into the hole, the other side walls of the grooves convexly merging with said pin outer sides, respectively.

4,475,781

BUSSING SYSTEM FOR STACKED ARRAY OF PANEL BOARDS

John C. Asick, Harrisburg; George H. Douty, Mifflintown; Joseph R. Goodman, Lake City; Kermit M. Jones, Jr.; John M. Landis, both of Camp Hill; Clair W. Snyder, Jr., York; John A. Woratyla, Camp Hill, and Dale R. Zell, Elizabethtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 8, 1982, Ser. No. 447,921

Int. Cl.³ H05K *1/08*

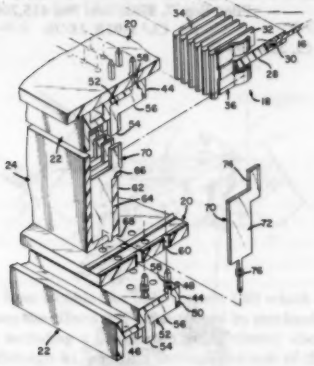
U.S. Cl. 339—17 LM **6 Claims**

1. A bussing system for interconnecting a plurality of adjacent parallel spaced circuit boards together in pairs, said system comprising:

a bussing connector mounted to receive a circuit board on opposite sides thereof, said bussing connector having an elongated member of rigid insulative material forming a plurality of parallel fins extending from opposite faces of said elongated member and defining terminal receiving cavities therebetween, a terminal mounted in each said cavity with a blade engaging tine between each fin;

first and second profiled blade terminal headers formed of

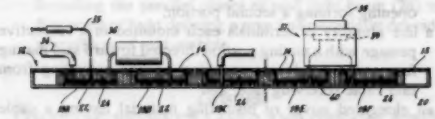
rigid non-conductive material, each header having an elongated profile with oppositely directed mounting and mating faces, a plurality of terminal passages extending through each header between said faces; and a like plurality of terminals each having a body portion with a blade extending therefrom in a first direction and a compliant pin portion extending therefrom in an opposite direction, each said terminal being mounted in a respective passage with said blade portion extending from said mating face and said compliant pin portion extending from said mounting face, said headers being mounted aligned on opposite sides of said circuit board with the compliant pin portions of the terminals being received in respective conductive apertures of said circuit board, said blade portions of the headers on opposite sides of a circuit board being in alignment, whereby circuit boards positioned adjacent opposite sides of said bussing header are interconnected by a blade portion of a first header on a first circuit board and a blade portion of a second header on a second circuit board.



4,475,782
ELECTRICAL CONNECTOR APPARATUS

George Bartolf, Brick Town, N.J., assignor to Buck Engineering Co., Inc., Farmingdale, N.J.

Filed Jan. 7, 1982, Ser. No. 337,595
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—18 B 3 Claims



1. An electrical connector apparatus for the interconnection of electrical conductors and components having conductive leads comprising:

a panel of insulating material having a plurality of openings therein adapted to receive electrical conductors,

a plurality of cavities positioned on said panel opposite said openings, each of said cavities being accessible to electrical conductors through a different set of said openings,

each of said cavities having adjacent coiled contact springs positioned therein which are adapted to receive and hold said electrical conductors inserted into said cavities through said openings,

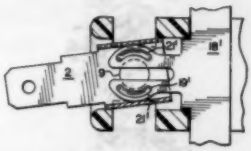
spring expansion baffles positioned along opposite walls of said cavities defining lateral expansion areas for said springs within said cavities,

said electrical conductors being held in frictional engagement between said springs, the lateral deflection of said springs within said lateral expansion areas being determined by the size of said electrical conductors.

4,475,783
CLIP-IN INTERCONNECTION BUS FOR MULTIPLE FUSE HOLDER ARRAYS

John M. Borzoni, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Aug. 24, 1981, Ser. No. 295,628
Int. Cl.³ H01R *9/04*
U.S. Cl. 339—19 11 Claims



1. A bus for an open frame fuse holder array for a plurality of insertable electrical cartridge fuses having cylindrical coaxial end terminals at opposite ends thereof, said array having a plurality of longitudinally spaced and aligned pairs of electrically conducting spring clips between which said fuses are to extend at right angles to the longitudinal axis of the array, each of said clips including a clip base pivotally mounted on said mounting base and a pair of fuse terminal-receiving clip jaws, said bus comprising a unitary strap-like main conductor and a plurality of parallel unitary electrically-conducting connecting shoes disposed in spaced-apart relationship and extending in the same direction away from the same side of said main conductor, said shoes having outwardly facing and convex arcuate portions configured frictionally to engage the interior portions of said clips and to allow rotation of the engaged clips while maintaining electrical and mechanical contact therewith.

4,475,784
CARTRIDGE AND RECEPTACLE FOR USE WITH AN ELECTRONICALLY CONTROLLED APPLIANCE

Joseph Lukawich, Somerville, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 2, 1982, Ser. No. 446,155
Int. Cl.³ H01R *13/453*
U.S. Cl. 339—43 7 Claims

1. In combination with an appliance having a housing and circuitry connected to a first terminal member mounted within said housing, an arrangement for connecting additional circuitry to said circuitry through said first terminal member, said arrangement comprising:

a cartridge including:

a shell having an opening;

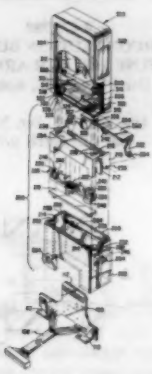
means for securing said additional circuitry within said shell; and

a second terminal member connected to said additional cricuitry and adapted for mating connection with said first terminal member, said second terminal member being fixedly mounted inside said shell in proximity to said opening so that an incursion of said first terminal member into said opening will result in a mating connection therewith;

a casing mounted on and extending through said housing, said casing having an opening;

means for mounting said first terminal member within said casing away from said opening;

a platform supported within said casing for translatory motion between first and second positions within said casing, said platform having an opening adapted to receive said first terminal member therethrough when in said second position, and said platform substantially blocking said casing opening when in said first position; and



latch means mounted on said platform for retaining said platform in said first position and cooperating with said cartridge for releasing said platform to allow said platform to be moved to said second position upon application of a force to said platform through said cartridge.

4,475,785

DEVICE WITH TENSION RELIEF FOR THE RETENTION OF A FLAT BAND CABLE

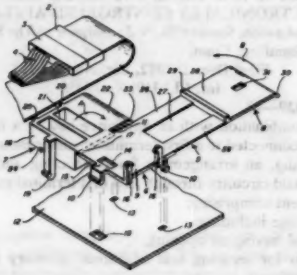
Siegfried Müller, Frankfurt, and Harmut Schulte, Glauburg, both of Fed. Rep. of Germany, assignors to Triumph-Adler A.G. fur Buro-und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,388

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203925

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—75 P **5 Claims**



1. A connector for the retention of a flexible flat band cable having at one end a plug joinable to a counterplug comprising

integrally formed first, second and third parts,

hinge means pivotally joining said second and third parts to said first part,

said flat band cable being clampable between said first and second parts when pivoted about said hinge means and detachably connected together,

said plugs being clampable between said second and said third parts when they are pivoted about said hinge means and detachably connected together thereby retaining said plugs counter to their plugging direction, and

means comprising complimentary hookshaped retaining means on said parts for detachably connecting said first and second parts and said second and third parts to each other when pivoted about said hinge means.

4,475,786

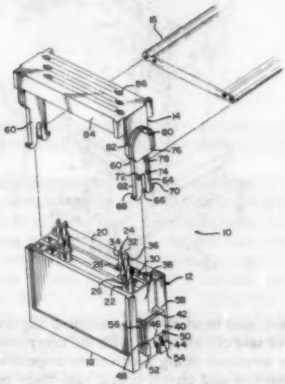
T BAR COVER LATCH

John A. Root, Middletown, and Michael J. Scully, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 7, 1982, Ser. No. 415,286

Int. Cl.³ H01R *13/36*

U.S. Cl. 339—99 R **2 Claims**



1. An improved electrical connector for terminating multiconductor flat flexible cable, said connector comprising:

an elongated housing member of insulating material having oppositely directed mating and cable receiving faces, a plurality of terminal passages extending between said faces, an outwardly directed latching channel at each end of said housing, a transverse bridge spanning said channel intermediate said mating and said cable receiving faces, each said bridge having a straight side directed toward said cable receiving face and a profiled side directed toward said mating face said profiled side defining a blind opening the closed end of which has outwardly directed recesses forming a first portion, the sides adjacent said opening forming a second portion;

a like plurality of terminals each mounted in a respective passage with a mating portion directed toward said mating face and a conductor engaging portion extending from said cable receiving face; and

an elongated cover of insulating material having a cable engaging surface, a like plurality of apertures in said surface each aligned with a respective passage in said housing member, and a leg assembly depending from each end of said cover to be received in a respective channel and defined by a pair of legs separated by a slot, a shoulder on the free end of each leg outwardly directed from said slot, at least one lug extending normal to the plane defined by said legs and being adjacent the closed end of the slot, and an abutment spaced from said slot and extending transversely with respect to said lugs;

whereby said shoulders of said legs engage said first portion of said profiled side of said bridge while said lug engages opposite the side of said bridge to hold said cover in a first position with said cable engaging surface spaced from said cable receiving face and said lugs are sheared off against

said bridge so that said latching shoulders engage said second portion of said profiled side to hold said cover in a second position with said abutment engaging said straight side of said bridge.

4,475,787

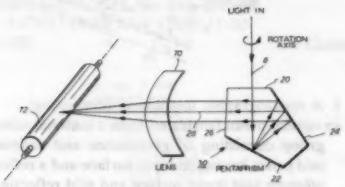
SINGLE FACET WOBBLE FREE SCANNER

Gary K. Starkweather, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 232,109, Feb. 6, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 422,783

Int. Cl.³ G02B 27/17

U.S. Cl. 350—6.4 **3 Claims**



1. A single facet wobble free light scanner (**30**) which effectively eliminates the effects of wobble caused by mechanical or other factors including a pentaprism being rotated about an axis passing through its sides and through the axis of the applied light beam (**8**), wherein the improvement is characterized by:

said pentaprism being positioned such that said light beam (**8**) enters through a first unmirrored surface (**20**), passes through the body of said pentaprism to a second mirrored surface (**22**) which internally reflects said light beam across the body of said pentaprism to a third proximate and mirrored surface (**24**) which internally reflects said light beam across the path of said light beam as it entered the pentaprism at the first surface (**20**) and exits said pentaprism at a fourth unmirrored surface (**26**) of said pentaprism, wherein said output light beam (**28**) defines a light plane perpendicular to said axis of the applied light beam (**8**) as said pentaprism is rotated, the angles of incidence equalling the angles of reflection within said pentaprism such that when and if wobble is introduced to said pentaprism monogon as it rotates, the output light beam (**28***a*) defines parallel planes within the range of the introduced wobble, and

lens means in the path of said output light beam (**28**) for focussing the parallel planes of said light beam (**28**) to a fine point of light defining a scan line essentially devoid of any effects of said wobble.

4,475,788

COUPLING BETWEEN LASER AND OPTICAL FIBER

Maurizio Tomassini; Eugenio Penco, both of Rome, and Angelo Tranquilli, Frascati, all of Italy, assignors to Selenia, Industrie Elettroniche Associate, S.p.A., Rome, Italy

Filed Jan. 21, 1982, Ser. No. 341,163

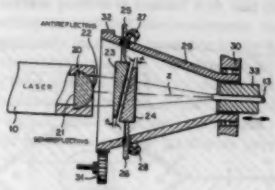
Claims priority, application Italy, Jan. 22, 1981, 47615 A/81

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 **6 Claims**

1. In a light-transmitting system including a laser with a cavity having an output end for the emission of a luminous beam, an optical fiber having an input end confronting said output end, and refractive means for focusing said beam onto said output end,

the improvement wherein said refractive means comprises a converging lens at said output end having a semireflecting face turned toward said cavity, and micrometrically adjustable afocal means interposed between said lens and



said input end for enabling alignment of said beam with the fiber axis.

4,475,789

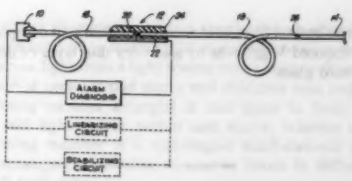
OPTICAL FIBER POWER TAP

David A. Kahn, Nepean, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Nov. 9, 1981, Ser. No. 319,197

Int. Cl.³ G02B 5/172, 7/26

U.S. Cl. 350—96.15 **13 Claims**



1. A fiberoptic tap comprising first and second optical fibers having a core and a cladding, the cores of the first and second fibers being of substantially identical diameter, the first fiber having a higher mode volume than the second fiber, one end of the second fiber being positioned adjacent to and aligned with one end of the first fiber for receiving light emitted from the first fiber in a number of predetermined modes, and a photodetector mounted to receive light emitted from said first fiber in modes other than said predetermined modes received by the second fiber.

4,475,790

FIBER OPTIC COUPLER

Roger G. Little, Bedford, Mass., assignor to Spire Corporation, Bedford, Mass.

Filed Jan. 25, 1982, Ser. No. 342,485

Int. Cl.³ G02B 7/26

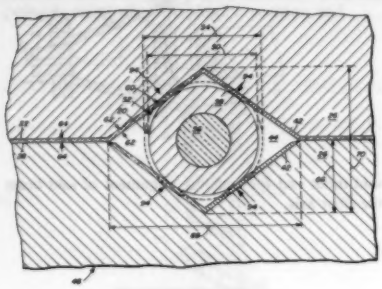
U.S. Cl. 350—96.21 **22 Claims**

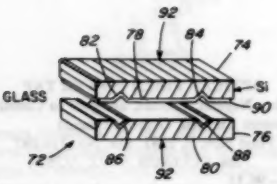
1. A fiber optic coupler comprising:

(a) a pair of thin wafers, each having at least one complementary opposed V-groove in its surface;

(b) a very thin layer of deformable hard glass covering the

surface and the V-groove of one of said wafers and the V-groove of the other of said wafers; and





(c) an optical fiber held securely within said complementary opposed V-grooves by said very thin layer of deformable hard glass.

4,475,791

DISPLAY ARRANGEMENTS

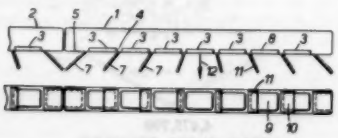
Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Nov. 24, 1982, Ser. No. 444,219

Claims priority, application United Kingdom, Nov. 26, 1981, 8135706

Int. Cl.³ G49F *13/14, 13/76*; G03B *21/60*

U.S. Cl. 350—127 **15 Claims**



1. A display arrangement including an elongate display device having a plurality of separately energisable display areas positioned along the length of said elongate display device and spaced from the ends of said elongate display device; and optical deflection means positioned in front of said elongate display device to magnify the size of each display area so that the total display area of the arrangement extends over the whole length of said elongate display device.

4,475,792

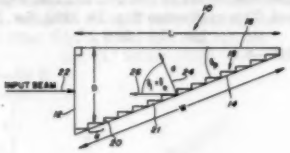
HIGH RESOLUTION DIFFRACTION GRATING

Louis Sica, Jr., Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1982, Ser. No. 402,403

Int. Cl.³ G02B *5/18*

U.S. Cl. 350—162.17 **8 Claims**



1. A spectographic instrument comprising:

an optical prism fabricated from a material selected from the group consisting of germanium and cadmium telluride, said prism having an input surface and a reflecting surface, wherein said input surface and said reflecting surface are intersecting planes; and

a diffraction grating formed on said reflecting surface.

4,475,793

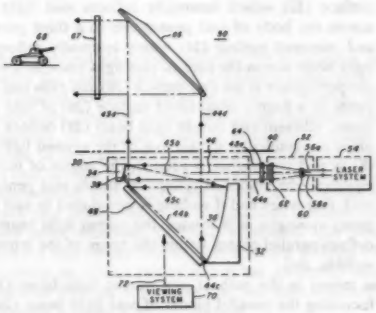
INTEGRATED OPTICAL BEAM EXPANDER

Eric H. Ford, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 1, 1982, Ser. No. 383,409

Int. Cl.³ G02B *27/14*

U.S. Cl. 350—172 **4 Claims**



1. A beam expander comprising:

(a) an electromagnetic energy generating means for generating an electromagnetic energy beam at a preselected wavelength said beam having first and second edge rays; and

(b) an optical path for receiving the electromagnetic energy from the electromagnetic energy generating means and conducting the energy without obscuration to an exiting optical path common to a plurality of optical systems, said optical path including a reflecting system consisting of:

(i) a secondary reflecting mirror for reflecting the electromagnetic energy including the first and second edge rays, said secondary reflecting mirror having a preselected position and curvature with respect to the incident electromagnetic energy for reflecting the first edge ray at substantially a 45 degree angle with respect to the incident energy,

(ii) a primary reflecting mirror for receiving and reflecting the energy including the first and second edge rays from

the first reflecting mirror, said primary reflecting mirror having a preselected position and curvature; and

(iii) a beamsplitter positioned substantially parallel and adjacent to the first edge ray reflected from the secondary mirror for receiving and redirecting the electromagnetic energy including the first and second edge rays along the common exiting optical path without obscuration.

4,475,794
ALUMINUM, ALUMINUM OXIDE, CROMIUM, GOLD MIRROR

Martin L. Baker, Winter Park, and Robert A. Iacovazzi, Orlando, both of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Feb. 3, 1982, Ser. No. 345,437
Int. Cl.³ C02B 5/08; C25D 11/02
U.S. Cl. 350—288 6 Claims

1. A method of applying a gold surface coating to a specular metallic substrate by the use of unpolished intermediate layers between the metallic substrate and the gold, consisting of the steps of:

diamond turning the reflectant surface of a metallic substrate,

coating the reflectant surface with a very thin layer of aluminum oxide,

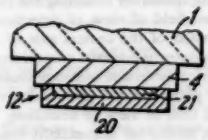
coating the aluminum oxide layer with a thin layer of chromium, and

coating the chromium layer with a layer of gold, which gold layer closely conforms to the polished surface of the metallic substrate.

4,475,795
ELECTROCHROMIC FILMS HAVING IMPROVED ETCH RESISTANCE

Marshall Leibowitz, Ridgefield, Conn.; Richard Crandall, and Brian Faughnan, both of Princeton, N.J., assignors to Timex Corporation, Waterbury, Conn.

Division of Ser. No. 953,716, Oct. 23, 1978, Pat. No. 4,233,339. This application Oct. 20, 1980, Ser. No. 198,683
Int. Cl.³ G02F 1/17
U.S. Cl. 350—357 3 Claims

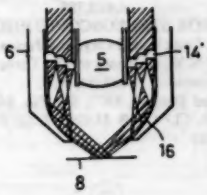


1. In an electrochromic display of the type having a first substrate with selectively actuable transparent electrodes and amorphous, water-bearing electrochromic layers thereon, a second spaced substrate with a counter electrode and electrolyte means between the substrates in contact with the electrochromic layers and counterelectrode, wherein the electrochromic layers are subject to degradation, such as etching, with time as a result of contacting the electrolyte means, the improvement which comprises: electrochromic layers each having at least a free surface portion in contact with said electrolyte means comprising crystallized electrochromic material which exhibits substantially increased resistance to the degrading effect of said electrolyte means as compared to the resistance of said amorphous material, thereby increasing the useful life of said electrochromic layers and display, each electrochromic layer having sufficient water retained therein to provide electrochromic properties suitable for display purposes.

4,475,796
EPIDARK ILLUMINATION SYSTEM

Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1982, Ser. No. 355,144
Claims priority, application Japan, Mar. 13, 1981, 56-36144
Int. Cl.³ G02B 21/10
U.S. Cl. 350—525 20 Claims

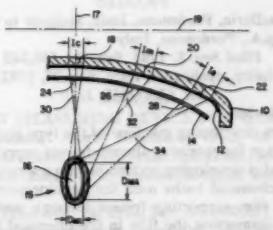


1. An epidark illumination system comprising an objective lens, a sleeve supporting therein said objective lens so as to be able to lead the light from a light source onto a sample through a space formed between said sleeve and objective lens, and an image forming member arranged in said space to form the image of said light source within said sleeve, wherein said image forming member is a ring-shaped multi-element lens made by arranging a plurality of convex lenses in different planes with each other.

4,475,797
COLOR CATHODE RAY TUBE SCREENING EXPOSURE METHOD AND APPARATUS

Yong S. Park, Barrington, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 30, 1982, Ser. No. 403,840
Int. Cl.³ G03C 5/00; G03B 41/00
U.S. Cl. 354—1 8 Claims



1. For use in fabricating a screen of a color cathode ray tube of the slot mask, stripe-screen type, a method for exposing a photosensitive coating on the concave inner surface of the faceplate of such a tube through a slot mask serving as an exposure master to form latent screen stripe images whose width increases with increasing radial distance along a screen

pitch axis perpendicular to the screen stripe images, comprising:

supporting a curved faceplate which has a photosensitive coating on its concave inner surface;

supporting adjacent the faceplate inner surface a slot mask defining an array of columns of spaced slots;

supporting a line source of radiation actinic to said coating on or near a central axis of the faceplate and spaced from said coating, with the source axis aligned parallel to said columns of spaced slots in said mask, said light source producing a linear light-emitting volume having a major cross-sectional axis which is parallel to the faceplate central axis and a major cross-sectional axis dimension which is substantially greater than the minor cross-sectional axis dimension of said light emitting volume; and

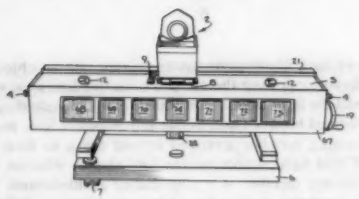
exposing said coating to said light source, such that the latent screen stripe images formed on said coating through said slots, for uniform exposure time and slot width, increase in width in a radial direction away from said screen center along said screen pitch axis.

4,475,798

CAMERA FOR STEREOSCOPIC PHOTOGRAPHY

Edgar C. Smith, Long Island City, and James B. Campbell, New York, both of N.Y., assignors to The Three Dimensional Photography Corporation, Yonkers, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,747
Int. Cl.[2] G03B *35/08, 27/32, 17/00*
U.S. Cl. 354—114 **30 Claims**



19. A camera comprising:

at least two objective lenses, each lens having an optical axis, and

a film plate having a plurality of openings corresponding to the number of objective lenses, the openings to the left or right of a given reference being progressively wider.

4,475,799

FILM DEVELOPING MACHINE WITH DEVICES FOR LOADING AND TRANSFERRING FILM SUPPORTING FRAMES

Silvano Castellarin, Pordenone, Italy, assignor to Fotomec-San Marco S.p.A., Pordenone, Italy

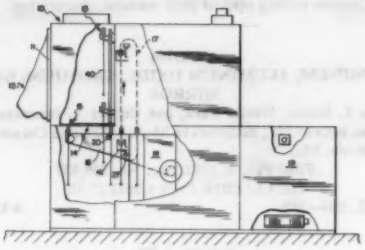
Filed Sep. 8, 1983, Ser. No. 530,342
Claims priority, application Italy, Sep. 28, 1982, 45731 A/82
Int. Cl.[3] G03D *3/10*
U.S. Cl. 354—308 **6 Claims**

1. In a film developing machine of the type including a film loading section for receiving therein frames supporting film to be developed, a developing section having a series of basins for containing chemical baths used for development, means for transferring film supporting frames through said developing section and immersing the film in the chemical baths in said basins, and a drying and unloading section for receiving developed film from said developing section and drying the film, the improvement comprising:

a light-tight casing housing each said section;

vertically movable guide means for moving film supporting frames downwardly within said film loading section to a lower portion thereof;

feeder means, located in said developing section at a position beneath said lower portion of said film loading section, for receiving film supporting frames transferred from said guide means and feeding such film supporting frames to said transferring means; and



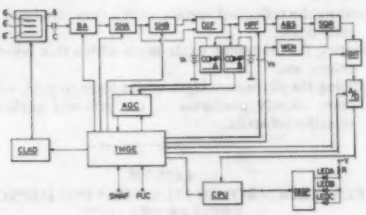
means for synchronizing movement of said feeder means and said transferring means such that each film supporting frame is at a predetermined position to be received by said transferring means from said feeder means.

4,475,800

FOCUS DETECTING SYSTEM

Takao Kinoshita, Tokyo, and Kazuya Hosoe, Kunitachi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 313,584, Oct. 21, 1981, abandoned.
This application Feb. 8, 1984, Ser. No. 577,329
Claims priority, application Japan, Oct. 23, 1980, 55-149063; Jun. 13, 1981, 56-3580
Int. Cl.[3] G03B *3/00*
U.S. Cl. 354—406 **11 Claims**



5. A focus detecting system capable of detecting the focusing state of an associated one of a plurality of interchangeable lenses, each having a different focal length, said system comprising:

(A) signal generating means for generating a signal indicative of the focal length of the associated lens;

(B) focus detecting means for detecting the focusing state of a predetermined field of view of detection at a position along an extension of the optical axis of the associated lens, said focus detecting means comprising:

(1) photo-electric conversion means consisting of a plurality of small photo-electric conversion elements, each dividing said field of view of detection;

(2) reading out means for sequentially reading out from the photo-electric conversion element which corresponds to the edge portion of the field of view of detection signals from said photo-electric conversion elements, and

(3) detecting means for amplifying the signals sequentially output by said photo-electric conversion means and generating the focusing state of the predetermined field of view of detection from said amplified signals; and

(C) means for changing the predetermined field of view of

detection of said focus detecting means on the basis of the focal length signal generated in said signal generating means, said changing means comprising:

(1) a circuit means for producing a time period signal corresponding to the time between outputs of the element corresponding to the edge portion of said photo-electric conversion element for a predetermined number of the photo-electric conversion elements corresponding to the focal length information; and

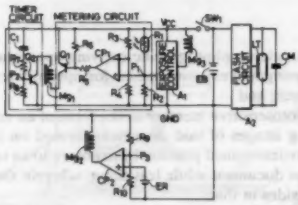
(2) means for reducing the amplification degree of said focus detecting means during output of the signal from said circuit means.

4,475,801

FLASHLIGHT PHOTOGRAPHY PREPARING DEVICE OF A CAMERA

Yoshiaki Otsubo; Hiroshi Wakabayashi, and Tadashi Otani, all of Yokohama, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 25, 1983, Ser. No. 516,727
Claims priority, application Japan, Jul. 29, 1982, 57-131107
Int. Cl.³ G03B *15/03*
U.S. Cl. 354—419 **6 Claims**



1. In a camera provided with a flash unit, a device for limiting the preparatory operation for flashlight emission of said flash unit, said device comprising:

(a) metering means for detecting that the brightness of an object to be photographed is lower than predetermined brightness and producing a detection signal;

(b) means operable to start photographing, said operable means having a first operation stage for producing a first signal and a second operation stage for producing a second signal subsequently to said first operation stage, the photographing being started in response to said second signal; and

(c) means including timer means responsive to said first signal to count a predetermined time set shorter than the time required from after said first signal is produced until the photographing is started in response to said second signal, said means causing said flash unit to effect the preparatory operation for flashlight emission in response to the detection signal of said metering means produced while said timer means is effecting the time count.

4,475,802

APPARATUS FOR DETERMINING SHUTTER SPEED ADAPTED FOR A PHOTOGRAPHING APPARATUS IN A MICROSCOPE

Kenji Onogi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 296,141, Aug. 25, 1981, abandoned.
This application Nov. 10, 1983, Ser. No. 550,640
Claims priority, application Japan, Aug. 30, 1980, 55-120216
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—456 **4 Claims**

1. Apparatus for determining shutter speed in a photographing apparatus for a microscope, said apparatus comprising:

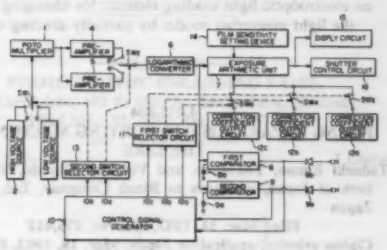
(a) a photo multiplier for photo-electric conversion of the light transmitted through an objective lens and for producing the photo-electric conversion signal;

(b) sensitivity changing means for stepwise changing the sensitivity of said photo multiplier;

(c) correction coefficient output means having correction coefficients corresponding to each of steps of the sensitivity levels of said photo multiplier;

(d) signal generating means having two reference levels, high and low and so formed as to generate a first signal when said photo-electric conversion signal is higher than said high reference level, generate a second signal when said photo-electric conversion signal is lower than said low reference level and generate a third signal when said photo-electric conversion signal is between said high and low reference levels;

(e) control means for receiving as an input the signal produced by said signal generating means and for controlling



said sensitivity changing means and correction coefficient output means, the control means controlling said sensitivity changing means so that the sensitivity of said photo multiplier is decreased during generation of said first signal so as to generate said third signal and so that the sensitivity of said photo multiplier is increased during generation of said second signal so as to produce said third signal, the control means controlling said correction coefficient output means in such a manner as to produce a correction coefficient corresponding to the set sensitivity of said photo multiplier; and

(f) an arithmetic unit for receiving as an input said photo-electric conversion signal and the correction coefficient generated from said correction coefficient output means, and for determining a shutter speed corresponding to intensity of light incident always on said photo multiplier independent of the changing in the sensitivity of said photo multiplier.

4,475,803

LIGHT MEASURING DEVICE FOR CAMERA

Makoto Katsuma; Akira Hiramatsu, both of Kanagawa; Kazuhiko Arakawa, and Hiroyasu Murakami, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

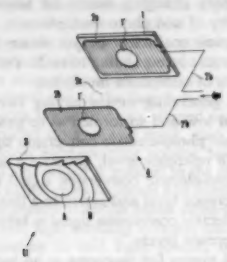
Filed Dec. 16, 1982, Ser. No. 450,237
Claims priority, application Japan, Dec. 22, 1981, 56-206129
Int. Cl.³ G03B *7/099*
U.S. Cl. 354—481 **4 Claims**

1. A light measuring device of a camera comprising:

a light sensing element for measuring brightness of an object;

a light condensing lens arranged before the light sensing element, said light condensing lens including a central first part and a marginal second part having different light

condensing characteristics, and said second part having a broader light measuring range than said first part; and



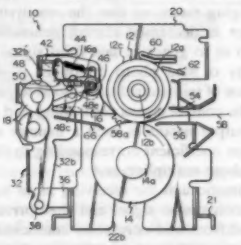
an electrooptic light shading element for changing between the light measuring modes by partially shading the lens.

4,475,804

FIXING APPARATUS FOR COPYING MACHINE OR THE LIKE

Tadaaki Kanno, Yokosuka, and Yuichiro Higashi, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 14, 1983, Ser. No. 475,412
Claims priority, application Japan, Mar. 18, 1982, 57-38198
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 FU **12 Claims**



1. A fixing apparatus comprising:

a housing;

fixing roller means rotatably supported by said housing;

pressure roller means rotatably supported by the housing in pressing contact with said fixing roller means;

pivotable sheet separator pawl means for separating a leading end portion of an incoming sheet from the fixing roller means;

engaging means for causing the sheet separator pawl means into engagement with the periphery of the fixing roller means;

spacing means for spacing the sheet separator pawl means from the periphery of the fixing roller means; and

a support member pivotally mounted on the housing and supporting the sheet separator pawl means, the engaging means and the spacing means;

the housing being detachable from a machine in which the apparatus is installed;

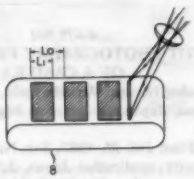
the spacing means spacing the sheet separator pawl means from the fixing roller means in interlocked relation with an operation with an operation for detaching the housing from the machine.

4,475,805

ELECTROPHOTOGRAPHIC COPYING APPARATUS

Kyoji Omi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 28, 1982, Ser. No. 454,073
Claims priority, application Japan, Dec. 28, 1981, 56-210153
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—8 **3 Claims**



1. An electrophotographic copying apparatus comprising:

scanning and exposing means for optically scanning a document; and

a photosensitive member in the form of an endless belt having images of said document formed on its surface in a predetermined position by exposure to an optical image of the document while travelling; wherein the improvement resides in that:

said photosensitive member in the form of an endless belt has a peripheral length which includes a reserve when the photosensitive member is trained over a group of rollers without any loosening, and said photosensitive member in the form of an endless belt is divided into a first section including a predetermined exposing position, a third section and a fourth section connected at one end thereof to opposite ends of said first section and accommodating the reserve in length by loosening the belt, and a second section connected at opposite ends to the other end of said third section and fourth section; and wherein the apparatus further comprises:

first drive means for driving the photosensitive member in the form of an endless belt for moving the photosensitive member in the form of an endless belt in said first section alternately at a high constant speed when scanning and exposing are carried out by scanning and exposing means and at a low constant speed or stopping same when the sensing and exposing means is returned to its original position;

second drive means for moving the photosensitive member in the form of an endless belt in said second section at a constant speed intermediate between said two speeds of high constant speed and low constant speed;

at least one duplication processing means other than the scanning and exposing means located around the second section; and

control means for effecting control of said means in a coordinated fashion, so that said reserve in the length of the photosensitive member in the form of an endless belt has a value corresponding to the product of the difference between the speeds at which the photosensitive member in the form of an endless belt is driven to move in the first section and the second section when the scanning and exposing means is returned to its original position and the time required for the return trip thereof.

4,475,806

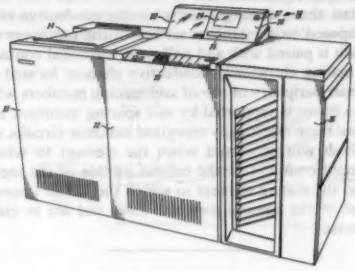
COPIER DISPLAY PANEL

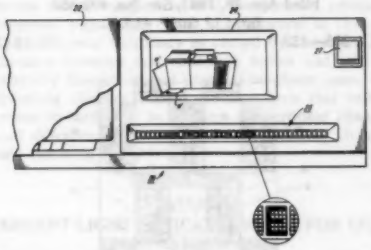
John W. Daughton, Webster; Andras I. Lakatos, Penfield; Terence W. Brady, Webster; James R. Bryce, Fairport; Eugene S. Evanitsky, Pittsford, and George E. Baker, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 420,963

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **8 Claims**





1. In a xerographic copier, a panel for displaying information regarding the status of said copier comprising:

message generation means having a number of individually addressable character generators which can be activated and thereby rendered visible;

a graphic display including a pattern of energizable elements which correspond to various copier components;

circuitry coupled to said graphic display and said message generation means to co-ordinate the visible message presented by the message generator means with the energization of said elements to inform a user viewing said panel of the status of said xerographic copier; and

an overlay for said display which illustrates a copier configuration outline to aid the user in orienting the component represented by an energized element with the copier configuration.

4,475,807

CLEANING APPARATUS FOR XEROGRAPHIC PRINTING APPARATUS

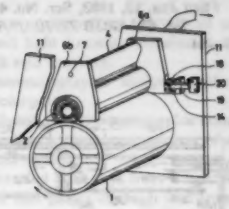
Motoya Toyoda; Masayuki Ainoya; Hiroomi Kozawa, and Shigenobu Katagiri, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed May 28, 1982, Ser. No. 382,985

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **5 Claims**

1. In a cleaning apparatus for a xerographic apparatus having a fur brush for eliminating toner adhering to a photoconductor, a housing for storing the fur brush, and a suction device; the improvement comprising moving means for moving said fur brush and said housing relative to one another in a manner such as to bring said fur brush into contact with the inner surface of said housing, said brush being a rotary brush



and being operable to remove toner accumulated within said housing and move the same toward said suction device.

4,475,808

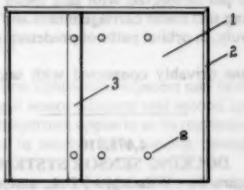
PHOTOGRAPHIC ENLARGING EASEL

Neil B. Cartwright, 693 E. 16th St., Idaho Falls, Id. 83401

Filed Mar. 15, 1982, Ser. No. 357,841

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—74 **1 Claim**



1. Device for exposing four equal segments of photographic sheet material by means of a photographic enlarger, without changing the position of the projected image or without moving the easel base, said device comprising:

base board with slightly raised boarders around the top and sides, opaque masks of various sizes with one fourth corner section removed for producing borderless prints, opaque masks with die cut opening in one fourth corner section for producing bordered prints or other design, a removable bar that can be placed in strategic positions on the board to accomodate the various sizes of masks and corresponding sizes of photographic paper,

means of positioning the removable bar on the board so as to allow raised borders on left and right side of working area to be exactly one and one half times the dimension of the width of the photographic sheet and mask used,

means of composing the photographic image for the first exposure by butting the mask against the top and left side raised borders with open quarter of mask in upper right position,

means of composing image in open area of mask,

means of placing photographic sheet material under said mask and making first exposure,

means of flipping said mask over laterally and butting against top and right raised borders with open quarter of mask in top left position,

means of shifting photographic sheet material under mask and making the second exposure,

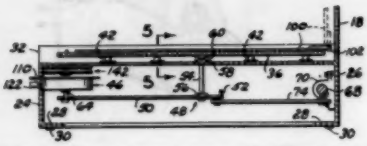
means of making the third and fourth exposure by repeating these two steps but with the photographic sheet material turned 180 degrees from top to bottom.

4,475,809

APPARATUS FOR MODIFYING IMAGES ON PHOTOGRAPHIC FILM

Thomas L. Byers, P.O. Box 26624, Oklahoma City, Okla. 73126

Filed Jan. 13, 1983, Ser. No. 457,811
Int. Cl.³ G03B 27/10, 27/68
U.S. Cl. 355—84 6 Claims



1. In a graphics modifier having a chassis defining a horizontal top and a rearward end upstanding backboard and having a moveable film board overlying the chassis top with a transparent film carriage normally superposed on the film board, the improvement comprising:

under carriage means supported in depending relation by drive rods extending through and fulcrumed by said chassis top and connected with opposing marginal edge portions of said film board for orbital movement in a horizontal path;

motor guide means supported by said chassis and having an eccentric pin connected with said under carriage means for moving said under carriage means and said film board, respectively, in orbital paths of predetermined magnitude; and,

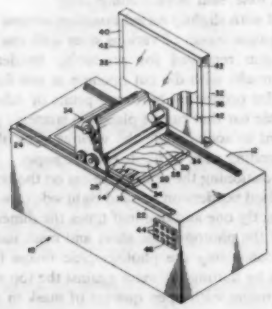
motor means drivably connected with said motion guide means.

4,475,810

DOCKING SENSOR SYSTEM

Richard B. Schroeder, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 6, 1980, Ser. No. 194,114
Int. Cl.³ G03B 27/04
U.S. Cl. 355—85 3 Claims



1. In an apparatus for the preparation of a photopolymerized relief image plate from liquid photopolymerizable material having

a horizontal surface which has a transparent platemaking area disposed above an actinic light source and upon which area a negative of the image to be printed may be positioned,

means to provide at least one layer of liquid photopolymerizable material over a negative positioned on the platemaking area of said surface,

a top cover under the effect of a uniform downward force, which top cover can float on the at least one layer of photopolymerizable material,

at least three nonaligned spacing members disposed around the platemaking area of the horizontal surface which will support the top cover at a preselected distance above the surface,

wherein the improvement comprises

at least three nonaligned electrically conductive elements, each such element located at the upper periphery of one of the spacing members,

at least three nonaligned electrically conductive elements disposed on the bottom surface of the top cover so that each is paired with and will make electrical contact with a mating electrically conductive element located on the upper periphery of one of said spacing members when the top cover is supported by said spacing members, and

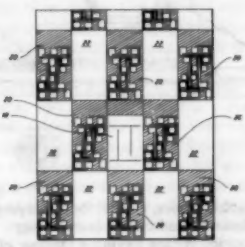
at least three electrically energized indicator circuits, each of which will be closed when the element to which the circuit connects on the bottom surface of the top cover and the mating element to which the circuit connects on one of the spacing members meet and are in electrical contact.

4,475,811

OVERLAY TEST MEASUREMENT SYSTEMS

Timothy A. Brunner, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 28, 1983, Ser. No. 489,664
Int. Cl.³ G03B 43/00
U.S. Cl. 355—133 13 Claims



1. A test wafer for testing the overlay for alignment of a second level pattern over a first level pattern for testing lithographic instruments used in making microcircuits comprising:

a wafer having a cluster in the form of a plurality of first level patterns alternating with a plurality of opaque patterns and a single second level pattern, said first level patterns and said opaque patterns being of substantially equal areas respectively, said patterns being constructed and arranged so that if a second substantially identical cluster is imaged on said first cluster with said second level pattern of the second cluster aligned with any one of said first level patterns on said first cluster then the opaque patterns of the second cluster would be aligned with the other first level patterns on said first cluster.

4,475,812

CAVITY COUPLED OPTICAL CONDITION SENSOR

Carl J. Buczek, Encinitas, Calif., and Ronald E. Belek, Coventry, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

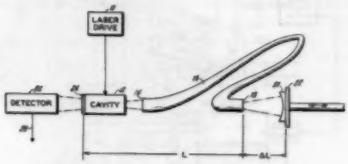
Continuation-in-part of Ser. No. 138,623, Apr. 8, 1980, abandoned. This application Sep. 30, 1981, Ser. No. 307,356
Int. Cl.³ G01B 11/16, 9/02
U.S. Cl. 356—32 6 Claims

1. An optical sensor for electrically measuring variations of a physical condition, comprising:

a coherent source of electromagnetic energy including an optical gain medium;

an optical waveguide in the form of at least one optical fiber of known length extending from the vicinity of said medium to transmit electromagnetic energy coming from said medium, there being essentially reflectionless coupling of said electromagnetic energy between said medium and said fiber;

reflective means in the vicinity of said fiber for reflecting electromagnetic energy exiting from said fiber back into said fiber upon operation of said coherent source of electromagnetic energy, said medium, fiber and reflective means forming at least two distinguishable axial mode



frequencies which form a difference frequency, said reflective means and said fiber being in spaced relation with the distance between them varying in response to changes in said physical condition; and

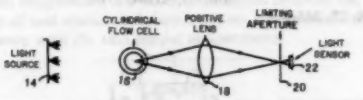
detector means coupled to said medium for creating an electrical signal that varies in proportion to changes in said difference frequency as caused by variation in said distance between said reflective means and said fiber; whereby changes in said physical condition cause corresponding changes in said distance from said reflective means to said fiber to produce proportional changes in said difference frequency and corresponding changes in said electrical signal.

4,475,813

DIVERGENT LIGHT OPTICAL SYSTEMS FOR LIQUID CHROMATOGRAPHY

Miner N. Munk, Riviera Beach, Fla., assignor to Milton Roy Company, St. Petersburg, Fla.

Filed Aug. 30, 1982, Ser. No. 413,220
Int. Cl.³ G01N *21/59, 21/64*
U.S. Cl. 356—73 **13 Claims**



1. In liquid chromatographic apparatus, an improved optical system for detecting changes relative to time in the chemical composition of the effluent of a chromatographic column which comprises:

a flow cell having a light transparent portion through which a beam of light may be passed along an optical axis through an effluent stream flowing in said cell,

a light source on one side of said cell to project light along said optical axis through said transparent portion and the contained effluent stream,

a light limiting aperture positioned on a side of said flow cell opposed to said light source through which light emitted from said flow cell may pass,

a positive light focusing element positioned in the path of light from said flow cell to said aperture, the distance s from the center of said flow cell to said light focusing element and the distance s' from said light focusing element to the plane of said aperture having the following relationship to the focal length f of said light focusing element:

$$1/s+1/s'=1/f$$

and

light sensor means positioned on the side of said aperture opposite to said light focusing element to receive light passed through said aperture.

12. In liquid chromatographic analysis methods, the improvement which comprises:

streaming the effluent of a chromatographic column through a flow cell having a transparent section of substantially cylindrical cross-section,

projecting non-parallel light rays from a light source along an optical axis that passes through said transparent section,

positioning a first light limiting aperture on said optical axis so that light passing along a first path from said flow cell passes through said first aperture,

positioning a second light limiting aperture substantially normal to said optical axis so that light passing along a second path from said flow cell passes through said second aperture,

positioning positive light focusing elements in said first and second paths of light passing from said flow cell transparent section respectively to said first and second apertures so that the distance s from the center of said flow cell to said light focusing elements and the distance s' from said light focusing elements to the plane of said apertures bears the following relationship to the focal length f of each said light focusing element:

$$1/s+1/s'=1/f$$

positioning a first light sensor adjacent said first aperture and a second light sensor adjacent said second aperture on the side of each aperture opposite to its respective light focusing element to receive light passing through said apertures, and

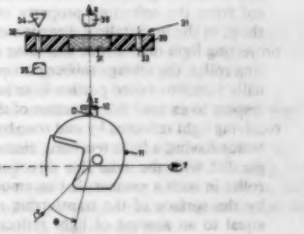
making measurements of light values passing to said light sensors through said apertures.

4,475,814

DEVICE FOR DETERMINING THE SPATIAL POSITION OF AN OBJECT

Pierre Marche, Boulogne Billancourt, France, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,356
Claims priority, application France, Jul. 18, 1980, 80 15868
Int. Cl.³ G02C *1/00*
U.S. Cl. 356—138 **5 Claims**



1. Apparatus for sensing the orientation of an object having a limited range of motion about each axis of a triaxial coordinate system, said apparatus comprising:

(a) first, second and third detection devices disposed on respective ones of the coordinate system axes for receiving light from the direction of the object, each device

including means for measuring an angle of polarization of received light with respect to the respective axis;

(b) polarized light sources disposed on the object including:

(1) a first light source arranged to effect continuous illumination of the first detection device over the limited range of motion of the object;

(2) a plurality of light sources, each arranged to effect illumination of at least one of the second and third detection devices over at least a part of the limited range of motion of the object, a first and second one of said plurality of light sources being arranged to collectively effect continuous illumination of the second detection device, over the limited range of motion of the object;

(c) means associated with the plurality of sources for effecting production of individual light characteristics, independent of light source orientation, enabling distinction between light from different ones of the plurality of light sources; and

(d) means associated with the detection devices for distinguishing between light from different ones of the light sources.

4,475,815

METHOD AND APPARATUS FOR MEASURING WIDTH OF A SELVAGE RUBBER PORTION EXTENDING IN TRANSVERSAL DIRECTION OF A COATING SHEET

Ryo Takasu, Higashiyamato, and Susumu Yazaki, Kodaira, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jan. 22, 1982, Ser. No. 341,739
Claims priority, application Japan, Jan. 30, 1981, 56-11639
Int. Cl.³ G01B *11/04*
U.S. Cl. 356—385 **6 Claims**

1. A method for measuring a width of a selvage rubber portion of a rubber coated sheet in which a plurality of reinforcing cords are arranged in substantially the equal interval and in parallel and integrally coated with rubber so that the cord portions form expanded portions in said rubber coated sheet, said selvage rubber portion extending in a transversal direction of the rubber coated sheet from the most externally positioned cord portion, comprising the steps of;

transferring said rubber coated sheet on a scattering surface of a transferring roller whose reflecting property is different from the reflecting property of said rubber coated sheet, in the longitudinal direction of said cord,

projecting light onto a zone including a part of the transferring roller, the selvage rubber portion and the most externally positioned cord portion in an inclined direction with respect to an axial line direction of the transferring roller,

receiving light reflected by said zone by means of a photodetector having a light receiving element array arranged in parallel with the axial line direction of the transferring roller in such a manner that an amount of light scattered by the surface of the transferring roller is substantially equal to an amount of light reflected normally by said cord portion to produce an output signal representing a light intensity distribution of the light reflected by said zone,

comparing said output signal with a predetermined level to generate a bivalent signal, and

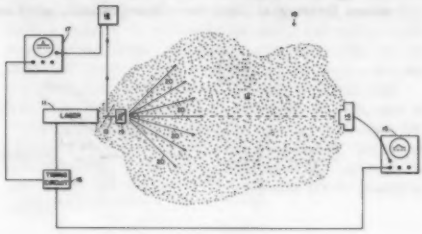
measuring the width of the above described selvage rubber portion on the basis of said bivalent signal.

4,475,816

METHOD FOR DETERMINING IN SITU THE ABSORPTION COEFFICIENT OF PARTICULATE MEDIA USING PULSED LASER TECHNIQUE

Gregory C. Mooradian, Del Mar, and Larry B. Stotts, Chula Vista, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1980, Ser. No. 121,937
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—437 **2 Claims**



1. A method for determining in situ the true absorption coefficient of a particulate media comprising:

pulsing a beam of optical radiation through a wide path in the particulate medium;

locating a radiation detector to receive the radiation at the end of the wide path;

actuating the detector for predetermined intervals to pass signals each representative of both the absorption and particulate multiple scattering of the particulate media as the beam passes therethrough; and

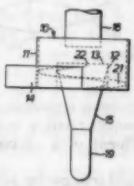
monitoring the magnitudes of the representative signals by comparing the representative signals to known values to determine the absorption coefficient.

4,475,817

MIXER FOR MIXING FIBRES INTO A SLURRY

William H. Brunt, Tyldesley, England, assignor to Pilkington Brothers P.L.C., St. Helens, England

Filed Oct. 13, 1983, Ser. No. 541,756
Claims priority, application United Kingdom, Oct. 21, 1982, 8230106
Int. Cl.³ B28C *5/06*
U.S. Cl. 366—3 **4 Claims**



4. A method of mixing glass fibres into a relatively dilute aqueous cement slurry, wherein the slurry is introduced through a tangential inlet into an annular chamber, whose inner wall is lower than its outer wall and which has a rising helical floor, so as to cause the slurry to move around the chamber in a rotary motion incorporating an upward component, the slurry is caused to overflow the inner wall on to a conical downwardly tapering outlet where it acquires a vortex motion, and the glass fibres are caused to fall on to the slurry in the conical outlet and thereby to be mixed into the slurry by means of the vortex motion.

4,475,818

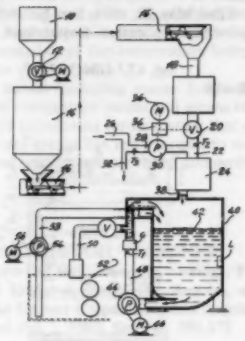
ASPHALT COATING MIX AUTOMATIC LIMESTONE CONTROL

Wojciech L. Bialkowski, 121 Wright St., Richmond Hill, Ontario, Canada

Continuation of Ser. No. 303,369, Sep. 15, 1981, abandoned. This application Aug. 25, 1983, Ser. No. 526,430

Int. Cl.³ B28C *7/04*

U.S. Cl. 366—17 **2 Claims**



1. An automatic control for regulating and critically controlling ratio differentials of limestone to asphalt in an asphalt coating mixture for a shingle line comprising, mixing means, means to feed limestone and asphalt to said mixing means, means for proportioning the rate of feed of limestone to the rate of feed of asphalt to said mixing means, means for containing the limestone/asphalt mixture, means associated with said containing means for recirculating said mixture in said containing means and thereby maintain said limestone suspended in said mixture, means for sensing the density of said mixture in said recirculating means in order to obtain the ratio of limestone to asphalt in said mixture, means to sense the temperature of said mixture, means to deliver information senses by said means for sensing density and said means to sense the temperature to a control means to automatically adjust said means for proportioning so as to proportion the amount of incoming asphalt to the amount of incoming limestone to maximize the amount of limestone in said mixture in accordance with a pre-set upper limit, and means to adjust said pre-set upper limit when the temperature sensed by said means to sense the temperature of said mixture is below a pre-set temperature level in accordance with the said sensed temperatures.

4,475,819

PNEUMATIC GRANULAR OR SEED APPLICATOR

Charles Balmer, Box 34, Elie, Manitoba, Canada (R0H 0H0)

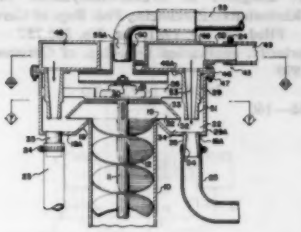
Filed Jul. 31, 1981, Ser. No. 288,675

Claims priority, application United Kingdom, Mar. 25, 1981, 8109305

Int. Cl.³ B01F *13/02*

U.S. Cl. 366—107 **23 Claims**

1. A pneumatic applicator for granular materials, such as granular fertilizer, herbicides or the like and seeds; comprising in combination a substantially vertically situated auger assembly including an upper discharge end, said auger assembly being operatively connected to a source of power and to a source of granular material, seed or the like, a distribution casing surrounding the discharge end of said auger assembly, said distribution casing having a base and an outer wall, a plurality of separation walls rising above said base to define separate receiving compartments, means for moving said material radially outwards towards the outer wall of said distribution casing, said moving means including a vane which passes next to a portion of each of said separation walls to move material directly into each of said compartments, a plurality of discharge conduits operatively connected to the base of said



distribution casing and a source of air operatively connected to said discharge conduits for conveying said material.

4,475,820

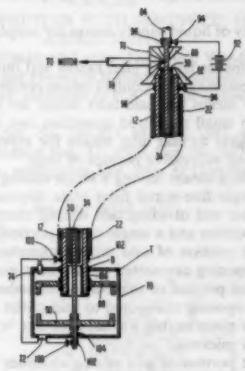
DUAL CONCENTRIC, ELECTRICALLY ISOLATED, MULTI-FUNCTION ROTATABLE FLEXIBLE SHAFT

Gerard M. Mulligan, Toms River, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 22, 1982, Ser. No. 436,092

Int. Cl.³ B01F *7/16, 15/02*

U.S. Cl. 366—142 **9 Claims**



9. Apparatus for mixing components in a mixing tank provided with a dump valve and sensor by a driving motor shaft, said apparatus comprising flexible shafting including

an outer flexible shaft having a hollow core,

an electrically non-conducting flexible tube disposed within said hollow core,

an inner flexible shaft received within said flexible tube,

means cooperating with said motor shaft for rotating said inner and outer flexible shafts in opposite directions, each of said shafts having a paddle blade secured thereto for rotation therewith in said mixing tank,

means for impressing an electric current across said shafts while rotating, and

other means for transmitting said current from said inner and outer flexible shafts to said sensor and dump valve whereby said dump valve empties said mixed components from said mixing tank in response to a signal from said sensor.

4,475,821
MIXING CHAMBER

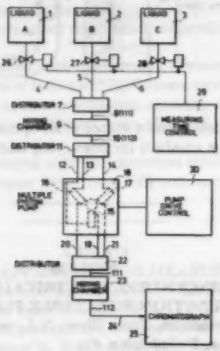
Dieter Koch, and Wolfgang Risler, both of Weyhe, Fed. Rep. of Germany, assignors to Bruker-Analytische Messtechnik GmbH, Rheinstetten-Forchheim, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,757

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3037898

Int. Cl.³ B01F *5/06*

U.S. Cl. 366—160 **10 Claims**



1. Liquid-mixing apparatus for producing a substantially homogeneous mixture of a plurality of liquids for supplying such mixture to a liquid chromatograph, said apparatus comprising

a plurality of liquid supply means for supplying a plurality of liquids,

housing means having inlet means and outlet means,

liquid measuring time control means connected between said supply means and said inlet means for supplying the liquids in small measured quantities one after the other in succession to said inlet means for repetitive time cycles covering successive periods of time,

said housing means having a single mixing chamber therein,

and a single fine-pored filter plate disposed in said mixing chamber and dividing said mixing chamber into a single inlet portion and a single outlet portion,

said inlet portion of said mixing chamber having a single inlet opening connected to said inlet means,

said outlet portion of said mixing chamber having a single outlet opening connected to said outlet means,

said filter plate having a small pore size in the range of two to fifty microns,

said inlet portion of said mixing chamber widening out between said inlet opening and said filter plate at an opening angle more than 90°,

said outlet portion of said mixing chamber widening out between said outlet opening and said filter plate at an opening angle more than 90°,

said filter plate having a diameter substantially greater than the diameter of said inlet opening whereby there is a correspondingly great variation between the maximum and minimum path length between said inlet opening and the various portions of said filter plate,

said filter plate having a substantially greater diameter than the diameter of said outlet opening whereby there is a correspondingly great variation between the maximum and minimum path length between various portions of said filter plate and said outlet opening,

said fine-pored filter plate forming a buffer member having an inlet side surface on which substantially uniform liquid pressure builds up and over which surface the liquid flow density is substantially identical,

said great variations in path length and the small pore size of said filter plate causing substantially homogeneous mixing of the small successive quantities of the liquids supplied to said inlet opening.

4,475,822
ELECTRONIC WATCH WITH CONDUCTOR TRACKS FORMED ON THE WATCH GLASS

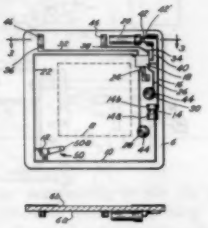
Jacques Müller, Reconvilier, and Elmar Mock, Bienne, both of Switzerland, assignors to ETA, S.A., Fabriques d'Ebauches, Switzerland

Filed May 20, 1981, Ser. No. 265,608

Claims priority, application Switzerland, May 28, 1980, 4129/80

Int. Cl.³ G04C *23/02*

U.S. Cl. 368—88 **7 Claims**



1. An electronic watch comprising a casing, said casing having an electronic watch circuit positioned therewithin, the components of said circuit including at least a battery, a display system, a resonator and an integrated circuit, said casing having a glass mounted thereon, said glass having an outside face and an inside face, with the peripheral edge of said inside face serving as a mechanical support for at least one of said components, and a plurality of electrically conductive tracks formed on at least said peripheral edge for making electrical connections between said components.

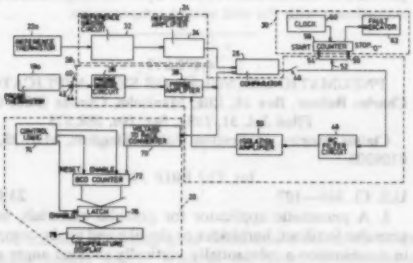
4,475,823
SELF-CALIBRATING THERMOMETER

W. Porter Stone, Walpole, N.H., assignor to Piezo Electric Products, Inc., Cambridge, Mass.

Filed Apr. 9, 1982, Ser. No. 366,856

Int. Cl.³ G01K *15/00*

U.S. Cl. 374—1 **2 Claims**



1. A calibration system for a temperature sensing probe in an electronic thermometer comprising:

a reference temperature element having a characteristic that varies as a function of temperature;

a reference temperature sensing circuit, responsive to said reference element, for providing a reference signal representative of the temperature sensed by said reference element;

a probe temperature sensing circuit responsive to said probe for providing a probe signal representative of the temperature sensed by said probe;

means for releasably interconnecting said probe and said probe temperature sensing circuit;

comparator means for comparing said probe signal representative of the temperature sensed by said probe and said reference temperature signal representative of the temperature sensed by said reference element; said probe temperature sensing circuit being responsive to said comparator means for adjusting said probe signal representative of the temperature sensed by said probe to match said reference signal representative of the temperature being sensed by said reference element; and

fault detector means including means for monitoring the output of said comparator means and means responsive to said means for monitoring for indicating that output from said comparator means has not dropped to zero within a predetermined time to indicate that a said probe cannot be calibrated.

4,475,824

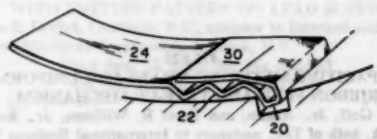
BEARING FOIL STIFFENER

Jerry Glaser, Playa Del Rey; Henry A. Sirridge, Palos Verdes Peninsula, and Ernest J. Ibach, Los Angeles, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 1, 1982, Ser. No. 394,378

Int. Cl.³ F16C *32/06*

U.S. Cl. 384—306 **25 Claims**



1. A hydrodynamic fluid bearing comprising:

a bearing support member having an opening therein;

a rotatable shaft operably disposed within the opening of said bearing support member; and

a plurality of compliant, overlapping, integral foil/stiffener elements operably mounted within the opening in said bearing support member around said rotatable shaft, each of said plurality of integral foil/stiffener elements having first a stiffener and then a foil in series extending from the end mounting thereof and an integral underfoil extending in parallel with the stiffener from the end mounting thereof and overlaying the stiffener.

4,475,825

NON-IMPACT PRINTING APPARATUS

Kenichiro Hashimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,593

Claims priority, application Japan, Aug. 31, 1981, 56-135596

Int. Cl.³ G01D *15/10*; B41J *12/02*

U.S. Cl. 400—120 **7 Claims**

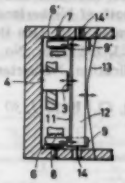
1. An non-impact printing apparatus, comprising:

a printing head for printing characters on a recording paper sheet by reciprocating said printing head along a direction of width of the recording paper sheet;

paper feeding means being disposed in the direction of width of the recording paper sheet for feeding the recording paper sheet when said printing head is operated within a predetermined range which is narrower than a printing range of said printing head;

means having a width larger than the printing range of said printing head, and being disposed to oppose said paper feeding means and said printing head for press-contacting the recording paper sheet with said printing head and said paper feeding means; and

means for biasing said press-contacting means toward said



printing head and said paper feeding means to define a center of pressure at substantially a center of a range of said press-contacting means which range corresponds to the predetermined range of said printing head.

4,475,826

MATRIX PRINTER WITH MAGNETIC HEAD ADJUSTMENT

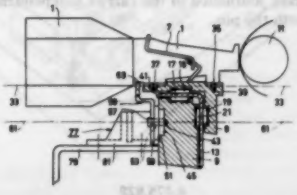
Helarich Dürr, Wilnsdorf; Lothar Haubrich; Wendelin Weber, both of Siegen, and Hermann Richter, Freudenberg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 266,571, May 22, 1981, abandoned. This application Feb. 17, 1983, Ser. No. 467,574

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019773

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **5 Claims**



1. An improved matrix printer having a carriage which is movable to and fro along a paper guide and on which there is arranged a printing head having different printing positions for which purpose it is relatively pivotable with respect to the carriage about an axis which extends perpendicularly to the line direction and also perpendicularly to the surface of the paper to be printed, the relative pivoting motion of the printing head with respect to the carriage being realized by means of a magnetically activatable position changer which exerts a torque on the printing head, wherein the improvement comprises:

said printer further includes means to pivot the position changer utilizing the braking effect of a magnetic field to change the position of the position changer responsive to movement of the carriage.

4,475,827

TEXT PROCESSING DEVICE COMPRISING AN EXCHANGEABLE DISC HAVING FLEXIBLE SYMBOL ARMS

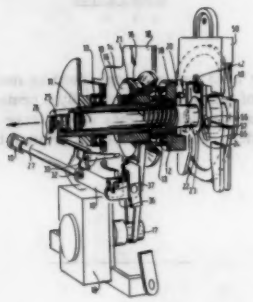
Theodorus J. M. Willemse, Berlicum, and Martinus T. Vorstenbosch, Den Dungen, both of Netherlands, assignors to Business Systems Incorporated B.V., Den Bosch, Netherlands

Filed Feb. 23, 1982, Ser. No. 351,584

Claims priority, application Netherlands, Dec. 21, 1981, 8105753

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **5 Claims**



1. A text processing device comprising a first guide for text receiving sheet material, a carrier displaceable along a second guide and carrying a disc rotatable about an axis and having flexible, radial symbol arms and a hammer mechanism rigidly mounted on the carrier opposite said first guide for touching each symbol arm characterized in that the disc has a central orifice receiving a pin journalled in the carrier and being displaceable with the aid of a mechanism from a retracted position into a projecting operational position and conversely, the pin snapping into said orifice in the latter position, in that a pressing member is fastened near the end of the pin and the carrier includes a counter-bearing coaxial with the pin, the disc being provided with a registering member, the registering member being arranged near the central orifice and adapted to co-operate with a driving element setting the angular position of the disc and being journalled in the carrier independently of and coaxially with the pin.

4,475,828

SMALL PRINTER

Tatsuo Nishikawa, Tachikawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 258,418, Apr. 28, 1981, abandoned. This application May 11, 1983, Ser. No. 493,744

Claims priority, application Japan, Jul. 31, 1980, 55-104405

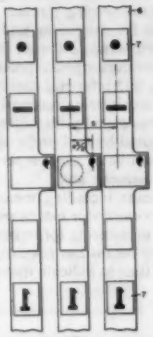
Int. Cl.³ B41J *1/20*

U.S. Cl. 400—146 **4 Claims**

1. A printing drum, comprising:

a cylindrical shaped drum; and

at least two printing type belts mounted around the peripheral surface of said drum and being spaced apart by a predetermined distance, each type belt having a plurality of selectively usable type portions each with a character thereon, each type belt also having a projection which is integrally formed thereon and extends in an axial direction of said drum, wherein the projection of one of said type belts extends into the space between said belts, and



wherein the character on the one type portion is provided on said projection.

4,475,829

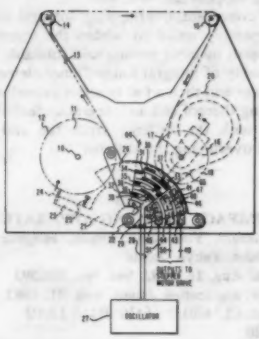
CAPACITIVE METERING MEANS FOR UNIFORM RIBBON FEED AND TAKE-UP MECHANISM

Willie Goff, Jr., Austin, and Errol R. Williams, Jr., Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,136

Int. Cl.³ B41J *33/14*

U.S. Cl. 400—232 **6 Claims**



1. Apparatus for feeding ribbon from a supply reel to a take-up reel, each reel supporting a portion of a fixed inventory of ribbon running from the supply reel to the take-up reel comprising

means for driving said take-up reel at selected one of a plurality of different rotational velocities,

capacitive means for sensing the portion of said inventory of ribbon on said supply reel and for producing an electrical signal representative of the radius of said portion, and

means for selecting one of said rotational velocities in response to said signal.

4,475,830
SPLICELESS RIBBON STRUCTURE HAVING LEADER AND TRAILER AND METHOD OF MANUFACTURE THEREFOR

John O'N. Schaefer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 306,791, Sep. 29, 1981, abandoned. This application Aug. 5, 1982, Ser. No. 405,633

Int. Cl.³ B41J *31/05*

U.S. Cl. 400—238 15 Claims

1. A spliceless single use bulk transfer type printing ribbon assembly comprising a pair of spools, a length of spliceless ribbon extending between said spools, said ribbon comprising an ink impermiable substrate and an ink layer thereon, a length of ink masking means adhesively attached to said ink and having an end proximate at least one end of said ribbon, and a zone of adhesive proximate each of said ends of said ribbon, and juxtaposed with said ink masking means and engaged with said spools.

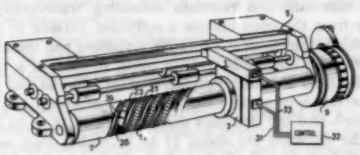
4,475,831
POSITION TRACKING EMITTER FOR A PRINTER WITH EMITTER PATTERN ON LEAD SCREW

John E. Drejza, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1983, Ser. No. 522,953

Int. Cl.³ B41J *21/16;* G01D *15/24*

U.S. Cl. 400—279 9 Claims



1. A position tracking emitter comprising a carriage, a lead screw having a helical thread, said lead screw being supported for rotary movement,

a lead screw follower mounted in said carriage and engaging said thread of said lead screw, whereby said carriage is driven along a linear path by said lead screw,

an emitter marking pattern provided on said lead screw and extending along said thread, and

transducer means mounted in said carriage for sensing said emitter marking pattern to produce electrical signals indicative of incremental displacement of said carriage along said linear path.

4,475,832
PARALLEL GUIDE FOR PUSH-BUTTON SWITCHES WITH MULTIPLE BUTTONS

Walter Wachs, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

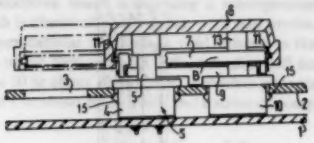
Continuation of Ser. No. 285,627, Jul. 21, 1981, abandoned. This application May 24, 1983, Ser. No. 496,339

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032282

Int. Cl.³ B41J *5/12*

U.S. Cl. 400—496 5 Claims

1. A key actuator apparatus for use in a keyboard carrier plate having at least one row of plural key apertures comprising a key housing mounted in a first key aperture and a vertically movable striker means positioned in said key housing, a guide portion shaped like said key housing and mounted in a second key aperture adjacent said first key aperture, a keybutton spanning plural key apertures connected at one opposed end onto said striker means and having at its other opposed end



a vertical guide tongue for supportive receipt in said guide portion, and a rectangular guide bracket having one end pivotally mounted on a first pair of two spaced pins in said keybutton and the other end pivotally mounted on a second pair of two spaced pins on an auxiliary portion arranged on said guide portion, said auxiliary portion beng slidably disposed on an upper surface of said guide portion.

4,475,833
WEB AND SHEET PAPER FEED MECHANISM FOR PRINTERS

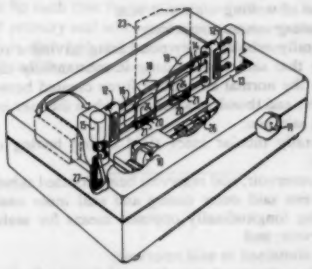
Zbigniew-Igor Sawicki, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,325

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1982, 3226510

Int. Cl.³ B41J *13/10*

U.S. Cl. 400—605 17 Claims

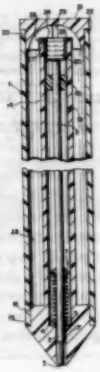


1. A paper transport mechanism for line by line printers comprising a pin belt tractor drive assembly including pin belt tractors mounted on drive shafts extending widthwise of the printer, a guide strip extending widthwise of the printer along which the tractors are movable, single sheet guide elements fixable to said guide strip, said guide elements defining a paper guidance channel therebetween, said guide elements removable from said printer, said tractor transport mechanism pivotable from a horizontal to a vertical position, said guide elements, when attached to said guide strip, and when said tractor transport mechanism is in the vertical position being position substantially vertically above a printing station area for vertical feed of sheets of paper between said guide elements, said guide elements including pressure rollers cooperating with one of said drive shafts for controlling movement of paper positioned between said guide elements.

4,475,834
WRITING INSTRUMENT PROJECTABLE BY FLUID PRESSURE

Donald F. Bean, Tienda Fanci, Calle Skal 9-10, Torremolinos, Malaga, Spain

Filed Apr. 2, 1982, Ser. No. 364,880
Int. Cl.³ B43K 21/02, 24/00
U.S. Cl. 401—99 7 Claims



1. A pen having longitudinally opposed first and second ends, comprising:

a writing element comprising a longitudinal tube having ink therein and longitudinally opposed ends, one of said ends being a writing tip;

actuating means for producing a projecting force in response to lateral pressure applied at any point about the entire outer periphery of said pen between said longitudinally opposed ends and for enabling a pen user to write with said pen when said pen is grasped and positioned in the hand of a user in the normal manner for the intended purpose of writing with said pen;

said actuating means comprising:

a generally tubular outer pen casing having a resilience such that said outer casing is substantially deformed with the normal amount of force created between the fingers and thumb of a pen user when the user is writing with said pen;

a generally tubular inner rigid casing having opposed ends;

a fluid reservoir, said reservoir being located substantially between said outer casing and said inner casing and having longitudinally opposed means for sealing said reservoir; and

a fluid contained in said reservoir;

said writing element being disposed longitudinally within said inner casing with said writing tip adjacent said first end and supported for longitudinal sliding movement;

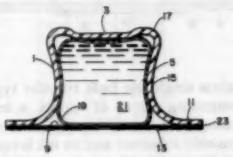
biasing means coacting with said inner casing and said writing element for biasing said writing element longitudinally in a direction toward said second end;

projecting means responsive solely to said projecting force produced by said actuating means for projecting said writing tip longitudinally against said biasing means in a direction toward said first end to project said writing tip longitudinally outwardly from said first end a distance sufficient to expose said writing tip, said projecting means comprising expansible chamber means disposed within one of said ends of said inner casing near said second end in fluid communication with said reservoir such that when said projecting force is produced the volume of said fluid in said reservoir is reduced and said fluid is caused to expand said expansible chamber means toward said first end to thereby expose said writing tip, said writing element being positively engaged with said expansible chamber means by said biasing means.

4,475,835
DEVICE FOR CLEANING SOIL FROM OVEN SURFACES

Gilles M. Verboom, Bolingbrook; Thomas L. Welsh, Downers Grove, and Henry P. Furgal, Lombard, all of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 21, 1982, Ser. No. 420,954
Int. Cl.³ A47L 13/34; A46B 11/02
U.S. Cl. 401—132 10 Claims



1. A device for applying a caustic containing cleaning solution to soil on a soiled oven surface and which is capable of simultaneously applying a scrubbing action to the soil, which device comprises a reservoir, a piercable closing means capable of keeping the cleaning solution in the reservoir until it is pierced and an abrasive, cleaning solution permeable, scrubbing pad of a non-woven screen of fibers formed with an adhesive to bind them together, the reservoir being generally oblong having a top, first and second elongated sidewalls depending from the top, third and fourth endwalls depending from the top, the sidewalls and endwalls terminating in a common plane to form an open bottom to the reservoir, and a lip surrounding the open bottom formed by a coplanar extension of the sidewalls and endwalls extending transversely outwardly from the open bottom a sufficient distance to permit the firm attachment of the abrasive scrubbing pad thereto, the top, sidewalls, endwalls and lip being formed as a unitary structure from a flexible polymeric sheet material and where the reservoir is of a size which will fit comfortably in a user's hand such that the sidewalls are from about 3¼ to 4¼ inches long, the endwalls are about 1½ to 2½ inches long and the reservoir had a depth of about 1½ to 2½ inches, the sidewalls each having an elongated indentation therein extending parallel to the top and suitable for gripping between the user's thumb and fingers and which assist in providing the reservoir with compressibility when the sidewalls are squeezed inwardly towards each other, the top having a crown-like ridge around the perimeter thereof to provide rigidity thereto when the sidewalls are squeezed, the endwalls being of sufficient rigidity to support the top without collapsing when scrubbing pressure is applied to the top in a direction normal to the surface being cleaned; the piercable closing means being positioned so as to be capable of supplying cleaning solution to the open bottom of the reservoir upon being pierced; the abrasive scrubbing pad extending over the entire open bottom of the reservoir and being firmly attached to the lip thereof around its entire perimeter.

4,475,836
BACKSCRUBBER AND/OR BACKSCRATCHER WITH REMOVABLE SPONGE ELEMENT

Aldo Colognori, 69 Lawton Ave., Cliffside Park, N.J. 07010

Filed Dec. 15, 1983, Ser. No. 561,789
Int. Cl.³ A47L 13/17
U.S. Cl. 401—201 13 Claims

1. A device for scrubbing and/or scratching the back of a user and providing means for manipulation by said user to reach otherwise inaccessible areas of the body, said device including:

(a) a handle portion adapted for grasping by the user;
(b) a wire-like stem portion secured to and extending from said handle portion;
(c) a pivot means provided at a determined distance from said handle and on said wire-like stem portion;
(d) a tong-like jaw formed from the distal end portion of the wire-like stem portion, this tong-like jaw formed into a semi-circular configuration of a selected radius;
(e) a separate wire-like length member having a midportion adapted to engage and be retained by said pivot means so as to be rotated and swung about said pivot means;

(f) a tong-like jaw formed in the end portion of this separate wire-like length, said tong-like jaw formed into a semi-circular configuration with a radius similar to that in the complimentary jaw;
(g) a hook retaining configuration formed in and at the other end of the separate wire-like length member and adapted to engage and be removably retained by said stem portion, and
(h) a sponge formed from resilient material of a selected softness and having a reduced intermediate portion configured and sized so as to provide and be gripped when and while the tong-like jaw portions are in a closed and retained condition.

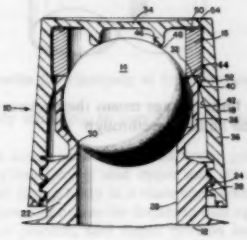
4,475,837

ROLL-ON APPLICATING PACKAGE WITH SEALING CAP

Arthur H. Dornbusch; Suzanne Benigni, both of Cincinnati, Ohio, and Clarence R. Peace, Jr., Edgewood, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 14, 1982, Ser. No. 368,350
Int. Cl.³ A45D *34/04, 40/26*
U.S. Cl. 401—213 **4 Claims**

1. A roll-on applicating package adapted to contain and dispense products incorporating a liquid having a very low surface tension, said package comprising:
a container comprising a body portion adapted to receive the product and having an integrally formed upper portion which includes an applicator socket terminating in a lip;
a spheroidal applicator element rotatably disposed within said socket with said lip circumscribing and thereby enclosing a major portion of said applicator element within said socket;
a closure telescoped over and enclosing said socket and applicator element, said closure comprising a topwall, a depending skirt-like sidewall, and a depending rib formed integrally on the interior peripheral portion of said topwall, and having mounted therein a porous, absorptive insert having a lower surface which is in intimate contact with said lip along substantially its entire perimeter;
means to affix said closure to said container when said closure is in telescoped condition; and
means to establish a continuous primary mechanical seal between the said applicator element and the said socket and adapted to resist leakage of said product therethrough when said closure is in telescoped condition;
said absorptive insert comprising a microporous polymer which is chemically unreactive with said product and has an open cellular structure, a void volume in the range of from about 50% to about 95%, a median cell size of from about 10 to about 100 microns, a median pore size of from about 1 to about 30 microns, and a stress of compression in



the range of from about 8 to about 15 kilograms/cm.² and which possesses capillary attraction with said liquid of a magnitude sufficient to cause preferential migration of said liquid into said microporous polymer rather than spreading on the exterior surface of said container when said liquid is in contact with both, whereby upon application of said closure into telescoped condition the compressibility characteristics of said microporous polymer permit sufficient penetration by said depending rib to insure that said insert is brought into intimate contact with said lip such that fugitive liquid which may leak through said primary seal when said closure is in telescoped condition is absorbed and held within said insert as a result of said capillary attraction.

4,475,838

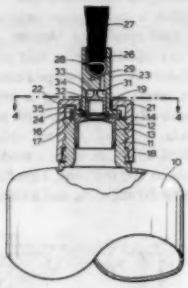
CLOSURE MEANS FOR A LIQUID

Rupert J. Cropton, Sunbury on Thames, England, assignor to Richardson-Vicks Inc., Wilton, Conn.

Filed Jul. 5, 1979, Ser. No. 54,783
Claims priority, application United Kingdom, Feb. 15, 1979, 7905378
Int. Cl.³ A46B *11/02*
U.S. Cl. 401—270 **9 Claims**

1. In a liquid dispenser of flexible material for dispensing liquid from a container comprising a brush holder member having an inner surface defining a bore and a plug member mounted in the bore and having an outer surface, substantial portions of the inner and outer surfaces having circular cross-sections of the same diameter and being maintained in sealing contact with each other, the improvement comprising:
protrusion means extending substantially axially on one of the inner and outer surfaces for radially distorting circular

cross-sectional portions of at least one of the inner and outer surfaces to interrupt the circular cross-sections



thereof to form passage means therebetween for communicating the liquid therethrough.

4,475,839

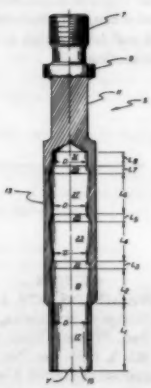
SUCKER ROD FITTING

Donald G. Strandberg, Park Forest, Ill., assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Apr. 7, 1983, Ser. No. 482,800

Int. Cl.³ F16D *9/00*

U.S. Cl. 403—2 **11 Claims**



11. A sucker rod fitting for receiving an end of a fiberglass sucker rod and for coupling the received sucker rod to another sucker rod, said sucker rod fitting comprising an elongated member having internal surfaces defining a bore extending from an open end of said member to a closed end, said internal surfaces including alternately long, radially outwardly tapered surfaces extending toward said closed end, and short radially inwardly tapered surfaces extending toward said closed end, said surfaces being dimensioned to cause breaks which occur in a received sucker rod to occur within said bore.

4,475,840

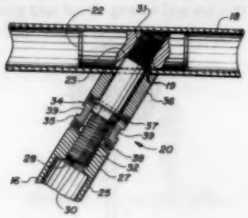
METHOD AND APPARATUS FOR CONNECTING BOAT RAILINGS

Gervase A. Schmitt, 1109 Hempfield Dr., and Ronald T. Schmitt, 1015 Woodridge Blvd., both of Lancaster, Pa. 17601

Filed Aug. 1, 1983, Ser. No. 519,054

Int. Cl.³ B25G *3/00*; F16D *1/00*

U.S. Cl. 403—20 **16 Claims**



1. A railing connector for connecting a first railing member to a second railing member at an angular relationship thereto, comprising:

a threaded member having a first portion engageable with said first railing member, a second portion engageable with said second railing member and a drive portion positioned between said first and second portions;

an adjustment member received within said first railing member, said adjustment member being axially aligned with said first railing member and rotatable about said first railing member axis to permit a circumferential movement of said second railing member about the axis of said first railing member, said adjustment member having a threaded opening therein to receive said threaded member;

a drive member engaged with said drive portion of said threaded member to affect rotation of said threaded member;

a spacer having an opening therethrough for the passage of said first portion of said threaded member, said spacer being positioned between said drive member and said first railing member; and

washers positioned, respectively, between said drive member, said spacer and said second railing member, each said washer having a thickness at least as great as the largest thread spacing of said threaded member.

4,475,841

INTERSECTION JOINT FOR WOODEN MEMBERS OF TRUSSES PARTICULARLY FOR SPACEFRAMES

Helmut Eberlein, Würzburg, Fed. Rep. of Germany, assignor to Mero-Raumstruktur GmbH & Co. Würzburg, Würzburg, Fed. Rep. of Germany

Filed Jul. 14, 1981, Ser. No. 283,191

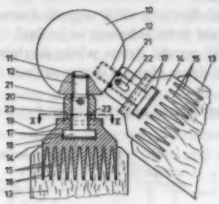
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1980, 3026689

Int. Cl.³ B25G *3/00*; F16D *1/00*

U.S. Cl. 403—287 **13 Claims**

1. In an intersection joint for a wooden truss member wherein a thread bolt with a head portion is secured on the end of the truss member by a fixing element, the improvement wherein the fixing element comprises at least one elongated portion extending toward the truss member, the end of the

truss member comprises a recess for receiving said elongated portion therein, and means is provided for securing said elongated portion to the truss member when it is positioned in said recess.



4,475,842

CORROSION RESISTANT SHAFT AND BOSS CLAMPING DEVICE

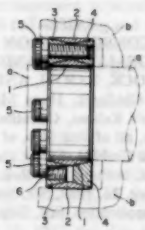
Mamoru Onaya, Toyonaka; Hitoshi Chiba, Takatsuki, and Toshihiro Hosokawa, Toyonaka, all of Japan, assignors to Tsubakimoto Chain Company, Osaka, Japan

Filed Mar. 18, 1982, Ser. No. 359,613

Claims priority, application Japan, May 18, 1981, 56-70495[U]

Int. Cl.³ F16D 1/06

U.S. Cl. 403—370 **2 Claims**



1. A corrosion resistant shaft and boss clamping device of the type having an inner race fitted over an outer periphery of the shaft, an outer race fitted over an inner periphery of the boss, said inner and outer races being expansible and contractable, a pair of wedge-shaped tapered surfaces being formed on an outer face of said inner race and on an inner face of said outer race, a pair of taper rings disposed between said inner and outer races, the taper rings having wedge-shaped surfaces complementary to said inner and outer races, and, a plurality of clamping bolts for urging said taper rings toward one another, each of the bolts threadably engaging one of the taper rings and having clamping surfaces for engaging the other of the taper rings, the bolts operable to clamp said shaft and said boss together, the improvement comprising:

said inner and outer races and said pair of taper rings being made of austenitic stainless steel, said plurality of clamping bolts being made of a precipitation hardened stainless steel, and one of said taper rings having a hardened nitrided layer on a surface thereof to be contacted by the clamping surfaces of the clamping bolts, the austenitic stainless steel of the taper rings and precipitation hardening and nitriding of the stainless steel bolts and stainless steel taper rings preventing seizing between abutting stainless steel clamping surfaces of said device.

4,475,843

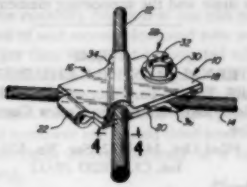
APPARATUS FOR CLAMPING CABLES

Gary J. Wyler, Saylorsburg, Pa., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 2, 1983, Ser. No. 529,084

Int. Cl.³ B25G 3/36

U.S. Cl. 403—394 **14 Claims**



1. An apparatus for clamping at least two cables together, comprising:

a clamp body including an upper portion and a lower portion,

a bendabble hinge secured on said upper portion and said lower portion joining said upper and lower portions to define said clamp body in a clam shell configuration,

one piece fastening means for fastening said upper portion to said lower portion, said upper portion including a first diagonal groove formed therein and said lower portion including a second diagonal groove formed therein,

said clamp body being fabricated of a deformable material, such that said first and second diagonal grooves deform about said cables to impart pinching forces between the sides of said grooves and said cables to thereby hold said cables securely with respect to each other.

4,475,844

METHOD AND APPARATUS FOR RESTRICTING LOCAL VARIATIONS IN GROUND LEVEL IN THE VICINITY OF SURFACE WATER DRAINS AND MANHOLES

Oscar S. Arntyr, Wallingatan 37, S-111 24 Stockholm, and Thord I. Engström, S-950 18 Bensbyn, both of Sweden

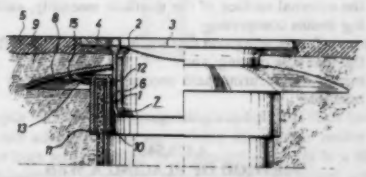
PCT No. PCT/SE82/00189, § 371 Date Jan. 26, 1983, § 102(e) Date Jan. 26, 1983, PCT Pub. No. WO82/04276, PCT Pub. Date Dec. 9, 1982

PCT Filed May 27, 1982, Ser. No. 463,448

Claims priority, application Sweden, May 29, 1981, 8103405

Int. Cl.³ E01F 5/00; E02D 29/12

U.S. Cl. 404—2 **8 Claims**



3. A structural arrangement in surface water drains and manholes for restricting local variations in ground level in the vicinity of surface water drains and manholes comprising a vertically oriented tubular drain, at locations where the freezing and unfreezing of the ground causes the ground and parts of the drainage system located therein to move, said arrangement including a drain cover-support means (2) arranged to be anchored in the surface ground layer (5) and provided with a tubular part (6) which projects down into the drain (1) and is axially movable relative to said drain; and a supporting element

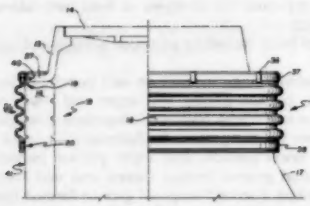
(8) which is arranged around the tubular part (6) of said drain cover-support means (2) and being separate therefrom and axially displaceable relative to the drain (1) while being guided by the upper part thereof, and said supporting element being arranged to be anchored in the surrounding ground layer and being provided with means (10, 11, 12) by which the supporting element (8) can exert a downwardly pressing force on the underlying drain (1) when a relative movement is obtained between the drain and the supporting element (8).

4,475,845

EXTERNAL MANHOLE CHIMNEY SEAL

Frank J. Odill, West Allis, Wis., and David E. Anderson, Elk River, Minn., assignors to The Cretex Companies, Inc., Elk River, Minn.

Filed Oct. 14, 1982, Ser. No. 434,402
Int. Cl.³ E02D *29/12*
U.S. Cl. 404—25 **13 Claims**



1. In a manhole assembly comprising a manhole casting having a flange and a manhole the improvement comprising:

a generally cylindrical sealing means of elastromeric material for externally sealing said manhole assembly against infiltration of water said sealing means comprising;

a first sealing section with an inner side, an outer side and a top surface, said inner side having an annular recess therein so as to present a cross section having a vertical inner surface and horizontal upper and lower rims, said annular recess being of dimensions suitable to receive said edge portion of said flange;

a second sealing section having an inner side and an outer side, said inner side being adapted to be received by the external surface of said manhole;

an axially expandable intermediate section joining said first and second sealing sections, said intermediate section spanning the vertical distance between said manhole casting and said manhole; and

securing means encircling the exterior of the sealing means for retaining the sealing means in a sealed relationship to the external surface of the manhole assembly, said securing means comprising;

a means for securing said first sealing section to said flange of the manhole casting; and

a means for securing said second sealing section to said manhole.

4,475,846

METHOD OF PLACING A WEB

Aart Nette, Werkendam, Netherlands, and Jacob A. Kruyt, Bremen, Fed. Rep. of Germany, assignors to Hollandsche Beton Groep N.V., Netherlands

PCT No. PCT/NL80/00015, § 371 Date Jan. 3, 1981, § 102(e) Date Jan. 2, 1981, PCT Pub. No. WO80/02437, PCT Pub. Date Nov. 13, 1980
PCT Filed May 2, 1980, Ser. No. 233,613
Int. Cl.³ E02B *3/12*; F16L *1/04*
U.S. Cl. 405—17 **7 Claims**

1. A method for laying a web in a submerged condition on an entrenchment, comprising the steps of:

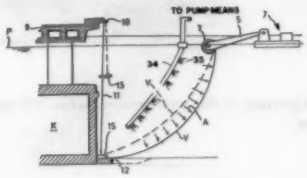
forming a web by joining sections of web material lengths together along edges extending substantially parallel to a center axis of a drum;

winding said web onto said drum as said drum is floating on a fluid surface;

navigating and floating said wound drum to a beginning section of said entrenchment to be laid;

unwinding said would drum while further navigating and floating said drum along a water surface of said entrenchment;

pumping water in said entrenchment from a section of said



entrenchment where said web has not been laid to a section of said entrenchment between said beginning section of said entrenchment and said floating drum to decrease a radius of curvature of a convex surface of said web to aid in unwinding said web from said floating drum, said convex surface extending from said drum to a floor of said entrenchment; and

a longitudinal axis of said drum being substantially parallel to said fluid surface as said drum is wound and said axis being substantially parallel to said water surface as said drum is navigated, floated and unwound.

4,475,847

PROCESS FOR CONSOLIDATION AND SEALING OF GEOLOGICAL FORMATIONS AND ARTIFICIAL BEDS OF ROCK, EARTH, AND COAL

Wolfgang Cornely, Gladbeck; Hans Mehesch; Frank Meyer, both of Essen; Rolf Kubens, Odenthal, and Martin Winkelmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen and Bayer Aktiengesellschaft, Leverkusen, both of, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,357
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139395
Int. Cl.³ E21B *33/138*; C08G *18/76*; E02B *3/12*
U.S. Cl. 405—264 **11 Claims**

1. A process for the consolidation of geological formations and artificial beds of rock, earth and coal by means of foaming and hardening polyisocyanate/polyol blends, wherein said polyol comprises a diol with secondary hydroxyl functions and having an OH number of about 150 to 1,000 and said polyisocyanate is liquid at room temperature and comprises crude MDI obtained by the phosgenation of aniline/formaldehyde condensation products or derivatives or prepolymers of said crude MDI which are liquuid at room temperature.

11. A two-chamber cartridge containing polyisocyanate in one chamber and polyols in the other one, characterized in that the polyol component and the polyisocyanate component are made up according to claim 1 or 2.

4,475,848

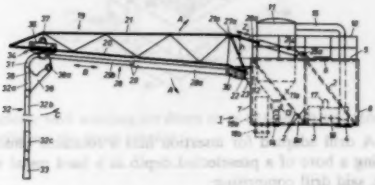
COMPACT VACUUM CONVEYOR APPARATUS

Thomas Truninger, Zurich, Switzerland, assignor to Adna Aktiengesellschaft, Vaduz, Liechtenstein

Filed Jun. 7, 1982, Ser. No. 386,047
Int. Cl.³ B65G *53/54*
U.S. Cl. 406—115 **9 Claims**

1. A compact vacuum conveyor apparatus for the pneumatic conveyance of loose bulk materials, comprising a support cabinet adapted to be transported by an undercarriage, said

cabinet comprising a parallelepiped having front, back, side, top and bottom walls, and said cabinet containing: a separator for the bulk material; a delivery device on said separator; and a vacuum pump aggregate connected to said separator; said apparatus further including a hollow tubular conveyor being connected to said separator and extending outwardly of said front wall of said cabinet; and an elongated support arm mounted on said front wall, said tubular conveyor being supported on said support arm; said tubular conveyor comprising a horizontal segment connected at one end to said separator, said segment comprising a telescoping hollow tube arrangement, a tubular bend element at the other end of said segment,



a vertical tubular segment connected to said bend element, said vertical segment including a flexible tube connected to said tubular bend element to facilitate movement of said vertical segment toward and away from said horizontal segment; a flexible, intermediate tubular segment connected to said vertical segment, and a suction nozzle connected to said flexible segment; said support arm including a pair of longitudinally extending rails, a trolley movable along said rails and being secured to said tube arrangement adjacent said other end of said horizontal segment for extending and retracting said tube arrangement, and hoist means on said trolley including a wind-up cable connected to said vertical segment for effecting said movement.

4,475,849

DEVICE AND METHOD FOR THE UNIFORM DISTRIBUTION OF A BULK MATERIALS STREAM

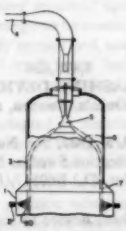
Peter Hilgraf, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,256

Claims priority, application United Kingdom, Oct. 1, 1981, 8129652

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—163 **11 Claims**



1. A device for the relative uniform distribution of particulate material comprising in sequence:

(a) first elongated tube;

(b) first truncated tubular cone, said first elongated tube terminating at the narrower end of said first truncated tubular cone;

(c) tubular expansion chamber having one end operatively connected to the wider end of said first truncated tubular cone;

(d) a second truncated tubular cone having its wider end operatively connected to the other end of said tubular expansion chamber;

(e) second elongated tube having one end operatively connected to the narrower end of said second truncated tubular cone;

(f) charging tube coaxially disposed at one end portion with said other end of said second elongated tube and having a diameter larger than said second elongated tube;

(g) third truncated tubular cone having its wider end operatively connected to the other end of said charging tube;

(h) relatively short tube having one end operatively connected to the narrower end of said third truncated tubular cone and the other end terminating in a downwardly facing opening;

(i) cone distribution means positioned coaxially below said opening and through said opening to define an annular space between said cone distribution means and said relatively short tube whereby the particular material passes through said annular space.

4,475,850

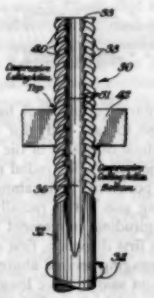
SPLIT HELIX ROUTER BIT

Frank J. Penoza, 2639 W. Robino Dr., Wilmington, Del. 19808, and Thomas F. Penoza, 215 Sterling Ave., New Castle, Del. 19720

Filed Aug. 16, 1981, Ser. No. 290,776

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—54 **8 Claims**



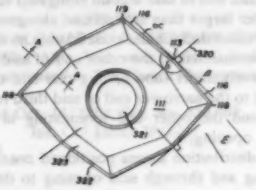
1. A split helical router comprising a cylindrical shaft having a shaft end adapted to engage driving means, said router utilized for high speed cutting of laminated materials in a direction substantially at a right angle to the cylindrical axis, a cutting zone containing at least one set comprising a plurality of uniform overlapping right-handed helical cutting edges and at least one set comprising a plurality of uniform overlapping left-handed helical cutting edges, said cutting edges being inclined at an angle of 25 to 35 degrees relative to the cylindrical axis of the router shaft, and said cutting edges having a substantially uniform outside diameter along the full length of the cutting zone, and more than one flute wherein the flutes separate the helical cutting edges and also extend the length of the cutting zone and are parallel to the cylindrical axis of the router shaft.

4,475,851

INSERTS FOR CUTTING TOOLS

Alan A. Hale, Berkhamsted, England, assignor to General Electric Company, Detroit, Mich.

Filed Dec. 13, 1982, Ser. No. 449,066
Claims priority, application United Kingdom, Feb. 26, 1982, 8205690
Int. Cl.³ B23P 15/28; B26D 1/00, 3/00
U.S. Cl. 407—113 7 Claims



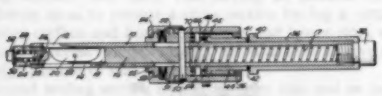
1. An indexable disposable insert comprising eight contiguous edge faces and two octagonal side faces having four alternate corners with equal obtuse angles of a first value; two opposing corners with equal obtuse angles of a second value; and two opposing corners with equal obtuse angles of a third value greater than that of the second value; cutting edges being formed at the junction of at least one of the octagonal side faces and each of the eight contiguous edge faces.

4,475,852

RETRACTABLE ROTARY CUTTING TOOL

Eldo K. Koppelmann, Cumberland, R.I., assignor to Santrade Ltd., Lucerne, Switzerland

Filed Dec. 24, 1981, Ser. No. 334,458
Int. Cl.³ B23B 51/00
U.S. Cl. 408—73 5 Claims



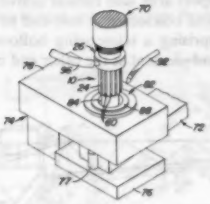
1. A retractable rotary cutting tool having a tool body, carrier means mounted to said body for movement relative thereto in the longitudinal direction of the tool body, a cutter mounted on said carrier means for radial movement between inward and outward positions, first camming means on said tool body for camming said cutter radially outwardly in response to relative longitudinal movement between said body and carrier means in a first direction, first abutment means on said body normally engaging second abutment means on said carrier means to prevent said relative longitudinal movement in said first direction, said body and carrier being relatively longitudinally movable in a second direction opposite said first direction in response to pushing of said carrier means against a stop, displacement means responsive to said relative longitudinal movement in said second direction with said cutter in an inward position to relatively move said first and second abutment means out of alignment and permit said relative longitudinal movement in said first direction wherein said cutter moves to said outward position, second camming means on said body for swinging said cutter to said inward position in reponse to said relative longitudinal movement between said body and carrier means in said second direction when said cutter is in an outward position, said displacement means being responsive to said relative longitudinal movement in said second direction as said cutter is being moved to an inward position to relatively move said first and second abutment means into alignment and prevent said relative longitudinal movement in said first direction after said cutter has reached said inward position.

4,475,853

ROTARY TOOL AND GUIDE

Thomas J. Morgan, Silvis, Ill., assignor to Deere & Company, Moline, Ill.

Filed Dec. 30, 1982, Ser. No. 454,785
Int. Cl.³ B23C 5/28; B23B 51/06
U.S. Cl. 409—137 10 Claims



1. A drill adapted for insertion into a rotatable chuck for forming a bore of a preselected depth in a hard metal workpiece, said drill comprising:

a straight fluted end having a generally cylindrical surface with a plurality of chip removal recesses provided axially therealong, at least one hardened cutting insert located at the axially forwardmost portion of each chip removal recess, wherein said chip removal recesses have substantially straight sidewall portions extending axially rearwardly from the respective inserts, said sidewalls lying substantially along planes parallel to the axis of rotation of the fluted end, a chip removal area tapering radially outwardly from at least one of the sidewalls at a distance from the axially forwardmost end of the fluted end at least equal to the depth of penetration of the drill, a grooved body portion having a generally cylindrical surface the radius of which is greater than the radius of the straight fluted end, said grooved body portion including a plurality of grooves extending axially along said portion, wherein said grooved body portion is adapted for insertion into a bearing positionally secured with respect to the workpiece to be drilled, and wherein said axially extending grooves provide a coolant and lubricant fluid path axially from the axially rearward portion of the drill to the straight fluted end portion.

4,475,854

LASHING DEVICE

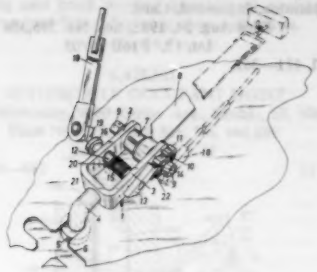
Sven-Olow Ericsson, Onsala, Sweden, assignor to Cargo Safe Soe AB, Sweden

Filed Jul. 8, 1982, Ser. No. 396,170
Claims priority, application Sweden, Mar. 31, 1982, 8202047
Int. Cl.³ B60P 7/13
U.S. Cl. 410—103 7 Claims

1. An improved lashing device to secure objects on a base, said device comprising a U-shaped frame member having two legs and means for affixing said frame to the base, a strap winding-on drum journalled in said frame member legs about an axis extending between said legs, a holding pawl member, and spring means normally urging said pawl in a first direction into a position holding a strap wound onto said winding-on drum against loosening, the improvement comprising

said holding pawl member arranged for movement in a direction perpendicular to said first direction to a position

lateral of said winding on drum wherein said pawl member is out of engagement with said winding-on drum to



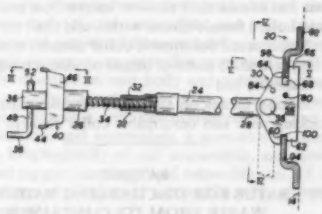
release said winding-on drum so as to slacken said strap by utilizing the strap tension.

4,475,855

CARGO CONTROL CART ANCHOR

Charles F. Crissy, and Paul M. Holmes, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Jun. 28, 1982, Ser. No. 392,544
Int. Cl.³ B61D *45/00*
U.S. Cl. 410—126 **4 Claims**



1. A cargo control anchor comprising, in combination, an elongated anchor body having first and second ends comprising a first tube telescopingly mounted upon a second tube for relative axial displacement thereto, a threaded shaft interconnecting said tubes whereby rotation of said shaft axially displaces said tubes relative to each other to vary the length of said body, a hook member mounted upon said body first and adapted to engage the cargo to be controlled, a support fitting mounted upon said body second end, said support fitting comprising a cargo control track insert having upper and lower notches defined therein for receiving the edges of a cargo control track opening, extensions defined upon said insert adjacent said notches adapted to maintain the insert within a track opening upon the insert being oriented within the track opening in a predetermined manner, a retainer movably mounted upon the insert movable between a notch blocking position and a release position wherein said notch blocking position said retainer restricts the depth of one of said notches to retain the insert within a track opening and in the release position increases the depth of said one notch to permit the insert to be removed from the track opening, retainer operating means mounted on said insert selectively moving said retainer between said notch blocking and release positions, a pivot pin mounted upon said support fitting pivotably mounting said body second end upon said support fitting, and a handle located at said body first end operatively connected to said threaded shaft for rotating said shaft.

4,475,856

EXPANSION SCREW WITH AN EXPANSION SLEEVE HAVING AN OUTER CYLINDRICAL SURFACE AND REGIONS OF GREATER AND LESSER WALL THICKNESS

Illar Teomingas, Enskede, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

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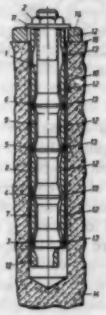
PCT Filed Dec. 16, 1980, Ser. No. 284,653
Claims priority, application Sweden, Dec. 21, 1979, 7910573
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—33 **7 Claims**



1. An expansion fastener adapted for being secured in a cavity comprising a screw portion having a threaded end, a nut threaded on said threaded end and an expandable sleeve on said screw portion, said sleeve having an outer cylindrical surface facing a wall of the cavity when the fastener is inserted into the cavity, said screw portion including integral, axially spaced conical portions defining intermediate cylindrical portions between the conical portions, said sleeve having an inner surface facing said screw portion and including a wall with thickened regions corresponding to said cylindrical portions to form projections at said inner surface of said sleeve located between adjacent spaced conical portions on said screw portion and thinner regions between said thickened regions corresponding to said conical portions to form recesses in said inner surface of said sleeve receiving said conical portions, said thinner regions being of reduced thickness compared to said thickened regions to permit greater expansion of said thickened regions than the remainder of the sleeve upon relative axial movement of said sleeve and screw portion to form outer bulges around the sleeve for pressing against the wall of the cavity to secure the fastener in the cavity, the spacing between said thickened regions of said sleeve being greater than the spacing between said conical portions of said screw portion.

4,475,857

DETENT APPARATUS

Syozo Hiraiwa, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

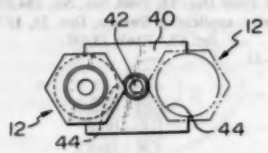
Filed Feb. 8, 1982, Ser. No. 346,676
Claims priority, application Japan, Feb. 18, 1981, 56-20522
Int. Cl.³ F16B *39/10*
U.S. Cl. 411—88 **2 Claims**

1. An apparatus for preventing rotation of a plurality of neighboring delivery valve holders each having a shank threaded into a fuel injection pump, an enlarged head with which a tool is engagable for driving the delivery valve holder into or out of the fuel injection pump and an annular surface defined between the shank and the head, comprising:

an abutment member including a generally rectangular, relatively thick flat plate with notches each having a

substantially semicircular shape to be complementary in shape to the valve holder, said abutment member being arranged between the neighboring delivery valve holders to engage the annular surfaces of the delivery valve holders along the edges of the respective notches, and

means for urging the abutment member upwardly into pressing contact with the undersides of the enlarged heads of the respective neighboring delivery valve holders, said urging means including a bolt which is threaded into a



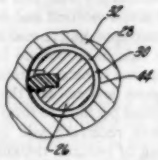
threaded central opening of the abutment member to strongly abut against the top of the fuel injection pump until the abutment member is raised into pressing contact with undersides of the enlarged heads of the neighboring delivery valve holders, said bolt having a polygonal recess at a head thereof for receiving an elongated fastening tool, so that an upward force is imparted axially to each of the neighboring delivery valve holders to cause firm frictional engagement between the shank and the injection pump into which the shank is threaded.

4,475,858

THREADED MEMBER HAVING RESILIENT INSERT

Benjamin C. Benjamin, Flint, and Jack E. Cheney, Haslett, both of Mich., assignors to Schmelzer Corporation, Flint, Mich.

Filed Aug. 10, 1981, Ser. No. 291,276
Int. Cl.³ F16B *39/34, 39/24*
U.S. Cl. 411—304 **6 Claims**



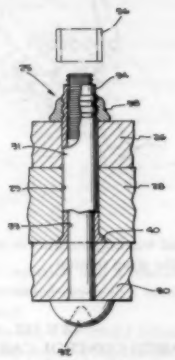
1. An adjustable threaded member for threaded cooperation with complementary threads, said threaded member having a body with external threads engageable with said complementary threads, said threaded member having a single radially extending recess forming an opening adjacent its threads, an elongated nylon insert in said recess extending radially beyond the root of said threaded member for frictional engagement with said complementary threads to hold said complementary threads relative to each other to prevent rotation in either direction, said opening of said recess being larger than said insert to form a space extending below the root of said external threads at opposite sides and adjacent to said insert in a direction circumferentially of said body member, said opening being operative to receive particles of material at said opposite sides forward of the direction of rotation of said threaded member and to accept a distorted portion of said insert at the other side of said opposite sides rearwardly of the direction of rotation of said threaded member upon rotation of said threaded member relative to said complementary threads in either direction, said recess being formed by a stepped bore, the smaller portion of which receives said insert and the larger portion of which forms said opening.

4,475,859

RIVETLESS ANCHOR NUT AND METHOD

H. LeRoy Oliver, Culver City, Calif., assignor to H & H Oliver Corporation, Inglewood, Calif.

Filed Aug. 24, 1981, Ser. No. 295,386
Int. Cl.³ F16B *19/05*
U.S. Cl. 411—361 **3 Claims**



1. A rivetless anchor nut comprising:

an hardened metal elongated hollow shaft member means for receipt in a hole in a workpiece and to extend through said workpiece to a remote side thereof, enlarged means at one end of said shaft member means for preventing said one end of said shaft member means from passing through said hole, a female thread within said shaft member means;

a malleable metal deformable collar element means for encircling said shaft member means on said remote side of said workpiece; and

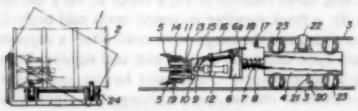
interlocking means on said shaft member means for interlocking with said deformable collar element means.

4,475,860

APPARATUS FOR DISCHARGING RADIOACTIVE WASTE FROM ITS CONTAINER

Magoji Okamoto, Nagoya, and Norio Okamoto, Tokyo, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed May 18, 1982, Ser. No. 379,500
Claims priority, application Japan, May 22, 1981, 56-76692
Int. Cl.³ B65G *65/40*
U.S. Cl. 414—416 **3 Claims**



1. An apparatus for discharging a radioactive waste from its container comprising:

a truck provided with driving means for the truck and arranged in opposition to an opening of said container;

seizing means provided on a side of the truck on a side of said opening of the container and including claws capable of closing and opening for seizing and releasing said radioactive waste;

a first cylinder connected to said seizing means for closing and opening said claws;

a second cylinder located between said truck and said seizing means for tilting said seizing means downwardly; and

a detector arranged between said truck and said seizing means for detecting pressure caused by said seizing means

penetrating into said waste when said truck moves toward said opening of said container for taking said waste therefrom, signals from said detector being transmitted for stopping said truck moving toward said container and operating said first cylinder to close said claws.

4,475,861

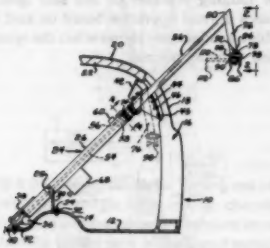
AUTOMOBILE OCCUPANT HOIST

Roland S. Medansky, 8900 Karlov Ave., Skokie, Ill. 60076

Filed Nov. 15, 1982, Ser. No. 441,609

Int. Cl.³ B60N *1/12*

U.S. Cl. 414—462 **12 Claims**



1. An automobile occupant hoist for entrance and exit of a handicapped occupant and for use with an automobile having a floor and a door post and a door openable from said post comprising: an elongated body, bracket means for mounting said body to said floor and said door post in fixed diagonal position transversely of said automobile, said body having an upper end adjacent the side of the automobile used for entrance and exit of said occupant, an extensible arm telescopically and non-rotatably mounted in said body and extending from the upper end coaxially thereof, power means for extending and retracting said extensible arm, said arm moving up and down and out of and into said automobile, a support arm extending substantially longitudinally of said automobile, and means for mounting said support arm from said extensible arm, all of said hoist being disposed within said automobile with said extensible arm retracted.

4,475,862

VEHICLE FOR THE TEMPORARY STORAGE OF WASTE

Bertil Paulsson, Lund, and Aarno Kyander, Malmö, both of Sweden, assignors to B.A. Innovation Aktiebolag, Lund, Sweden

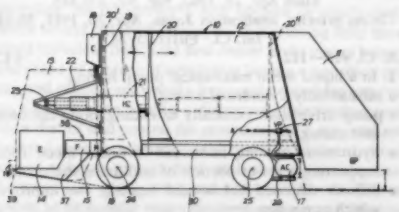
PCT No. PCT/SE81/00234, § 371 Date Apr. 23, 1982, § 102(e) Date Apr. 23, 1982, PCT Pub. No. WO82/00627, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 24, 1981, Ser. No. 375,284

Claims priority, application Sweden, Aug. 26, 1980, 8005962

Int. Cl.³ B65F *3/00*

U.S. Cl. 414—513 **6 Claims**



1. A vehicle for the temporary storage of waste comprising a collecting section of box-shape defining a storage space of generally rectangular section and substantially the same dimensions as the vehicle, a standing plate supported in said storage space for movement, in the longitudinal direction of the vehicle, between a first forward end position and a second rearward end position to adopt said storage space of the collecting section to the volume of the waste stored in said space, drive means for moving said standing plate between said first and second positions, said collecting station constituting the body and frame of the vehicle and comprising a bottom part forming the frame of the vehicle, front wheels carried by said bottom part below said first position of the standing plate, rear wheels carried by said bottom part below said second position of the standing plate and a front wall on said bottom part, said bottom part being formed as a plate-shape element of channel section including a horizontal lower base plate, opposed vertical walls joined to the lower base plate at the longitudinal edges thereof, and horizontal outwardly extending upper base plates joined to the vertical walls at the upper edges thereof, said standing plate including a central portion which is supported between the vertical walls of the bottom part, and side parts which are supported above the upper base plates of the bottom part, reinforcing means on said bottom part extending longitudinally at the juncture of the vertical walls and said upper base plates, said reinforcing means including portions overlapping said vertical walls and said upper base plates to reinforce the same and to provide means for sliding and guiding of said central portion and side parts of said standing plate thereon, said bottom part further including a portion extending longitudinally in front of said front wall and forwardly of said front wheels for supporting a driver's compartment.

4,475,863

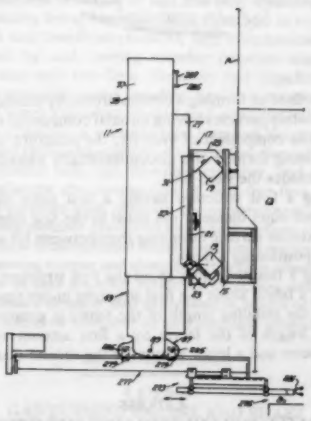
ELECTRIC SERVO DRIVE LIFT UNIT

Leland F. Blatt, and John A. Blatt, both of 31915 Groesbeck Hwy., Fraser, Mich. 48026

Filed May 24, 1982, Ser. No. 381,146

Int. Cl.³ F16H *1/04*; B65G *57/20*

U.S. Cl. 414—589 **22 Claims**



1. A lift unit for a punch press having a bed and a die opening comprising a housing including an upright back plate mountable upon said press;

a pair of upright parallel spaced tracks within said housing mounted upon and spaced forwardly of said backplate;

an upright feed screw journaled and supported upon and spaced forwardly of said back plate;

a carriage including an upright carriage plate spaced forwardly of said feed screw;

vertically spaced bearing blocks secured upon outer edges of

said carriage plate rearwardly thereof, each bearing block supporting a plurality of right angularly related cam followers operatively engaging opposite sides of said tracks and the opposite outer edges thereof for guidably mounting said carriage plate upon said tracks for reciprocal movements thereon;

a nut mount assembly secured to said carriage plate including a nut threadedly receiving said screw;

a motor mounted upon said back plate having a drive shaft parallel to and coupled with said feed screw;

said carriage extending below said housing;

an adjustable support cradle mounted upon and depending from said carriage adapted to mount a workpiece gripper tool adapted for programmed reciprocal movements in a substantially horizontal plane relative to said die opening and bed;

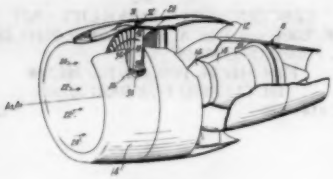
and an electronic encoder axially connected to said feed screw and electrically connected to said motor for controlling the direction and number of rotations of its drive shaft for effecting a programmed repetitive cycle of predetermined vertical feed movements of said carriage.

4,475,864

CONTAINMENT STRUCTURE

Angelo M. Patacca, Glastonbury, Conn., and Emile J. Premont, South Hadley, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1981, Ser. No. 332,696
Int. Cl.³ F16P *1/02*
U.S. Cl. 415—9 **25 Claims**



1. A method of forming a circumferentially extending structure to contain particles having an axial component of velocity and a radial component of velocity, the structure including a flexible casing formed of a circumferentially extending fabric which includes the steps of;

forming a first structure having a first outer diameter, a second outer diameter not equal to the first diameter, and an exterior surface extending therebetween for supporting and positioning a fabric;

forming a flexible casing about the first structure by wrapping a fabric about the first structure under tensions such that the installed length of the fabric is greater than the free length of the fabric by a first amount at the first diameter and a lesser amount at the second diameter.

4,475,865

APPARATUS FOR CONTROLLING THE OPERATION OF A WATER TURBINE OR A PUMP TURBINE AND A METHOD THEREOF

Kaneo Sugishita, Ayase, and Katsuyuki Kawahara, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 25, 1982, Ser. No. 342,409
Claims priority, application Japan, Jan. 30, 1981, 56-12766
Int. Cl.³ F03B *15/08*
U.S. Cl. 415—36 **18 Claims**

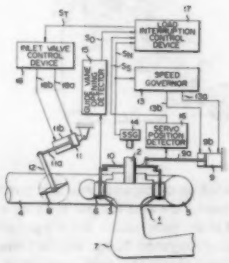
1. An apparatus for controlling the operation of a water turbine or a pump turbine equipped with an inlet valve, and guide vanes adapted to be opened and closed under control of a speed governor, comprising:

(1) means for detecting a rotation speed of the water turbine or the pump turbine during a power generation operation;

(2) a load rejection control device including;

(a) a load rejection detector connected to receive the rotation speed for comparing the rotation speed of the water turbine or the pump turbine with a first prescribed value and for producing a load rejection signal when the rotation speed of the water turbine or the pump turbine becomes greater than said first prescribed value,

(b) a governor state detector for receiving an input signal and for judging whether or not said speed governor performs a normal operation based on said input signal to produce a judgement signal when the speed governor is judged as being normal,



(c) an inlet value open order device connected to receive said judgement signal for producing an output signal when neither an emergency shutdown order nor a quick shutdown order is issued,

(d) an inlet valve close order device connected to receive the load rejection signal and connected to receive said output signal for producing an inlet valve close order based on the load rejection signal and said output signal, and

(3) an inlet valve control device connected to receive the inlet valve close order and connected to receive said output signal of the inlet valve open order device for producing a control signal, to close the inlet valve to a prescribed opening when said inlet valve close order is received and for producing a control signal to open the inlet valve to a maximum opening when said output signal is received.

4,475,866

LIQUID METAL MECHANICAL PUMP

Mitsuru Kambe, Higashi, and Tomihiro Fukada, Nagareyama, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,545
Claims priority, application Japan, Apr. 30, 1981, 56-65422
Int. Cl.³ F01D *25/14*
U.S. Cl. 415—112 **4 Claims**

1. In a liquid metal mechanical pump having

a substantially cylindrical casing,

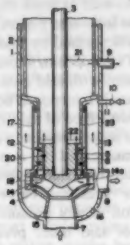
a pump drive shaft vertically extending along the center of said casing,

a hydrostatic bearing immersed in liquid metal rotatably supporting a lower portion of said drive shaft, and

a diffuser disposed below said bearing, the improvement which comprises:

a solid, imperforate partition wall extending upwardly from said diffuser and surrounding said bearing along the axial direction thereof with a clearance between said solid

partition wall and said bearing, said solid partition wall being provided with an upper end positioned substantially above the hydrostatic bearing between areas inside and outside said solid partition wall at a position remote from said diffuser, said area outside the solid partition wall constituting a mixing chamber,



whereby a part of liquid metal forced out of the diffuser is thoroughly mixed in said mixing chamber in order to eliminate any temperature differences in said liquid metal and then the mixed part of the liquid metal flows over the upper end of the solid partition wall before being supplied to said hydrostatic bearing so that thermal shocks to the hydrostatic bearing are reduced.

4,475,867

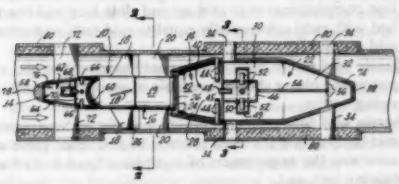
AXIAL FAN AND NOISE ABATEMENT APPARATUS COMBINATION

David A. Smith, Topanga, Calif., assignor to General Acoustics Corporation, Los Angeles, Calif.

Continuation of Ser. No. 189,321, Sep. 22, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 456,545

Int. Cl.³ F04D *29/66*

U.S. Cl. 415—119 **6 Claims**



1. In combination with a duct and an axial fan having a central fan structure from which a plurality of blades extend disposed within said ducts, a noise abatement apparatus comprising:

first center body means extending axially from said central fan structure and in alignment therewith in a downstream direction for occupying a first volume in which turbulence would otherwise occur and for creating fully developed turbulent flow, said first center body means being in the shape of a figure of revolution having a transition zone tapered radially outwardly from said central fan structure to a center zone having a diameter substantially greater than that of said central fan structure and a terminal zone tapered radially inwardly, said center zone being dimensioned relative to said duct such that an annular space between said center zone and said duct is reduced compared to an annular space between said central fan structure and said duct, whereby said fully developed turbulent flow is initiated;

first side branch resonator means positioned within said first center body means for attenuating resonance of at least one frequency band produced by said fan;

second center body means extending axially from said central fan structure in an upstream direction for occupying a volume in which turbulence would otherwise occur; and

second side branch resonator means positioned within said second center body means for receiving energy traveling upstream through said duct and for attenuating resonance of at least one frequency band produced by said fan.

4,475,868

FREE-FLOW-PUMP

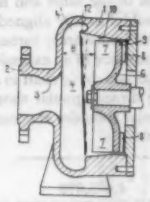
Hagen Renger, Lignières, Switzerland, assignor to Emile Egger & Cie SA, Cressier, Switzerland

Filed Dec. 1, 1982, Ser. No. 445,971

Claims priority, application Switzerland, Dec. 8, 1981, 7825/81

Int. Cl.³ F04D *29/44*

U.S. Cl. 415—213 A **7 Claims**



1. An improved free-flow pump of the type having a pump housing defining a free-flow chamber having an axial dimension and a radial dimension, a suction pipe and a limiting member in communication with said free-flow chamber, said limiting member defining an impeller housing having a radial circumference less than that of said free-flow chamber, said impeller housing being laterally offset from and in communication with said free-flow chamber, said communication being established by said limiting member between said impeller housing and said free-flow chamber, said impeller housing having a rotatable vaned impeller, having a rotational direction, said vanes extending toward said axial dimension of said free-flow chamber, a pressure pipe disposed along and intersecting said radial circumference of said free-flow chamber, in communication with said free-flow chamber, and a housing tongue adjacent the intersection of said free-flow chamber with said pressure pipe, wherein the improvement comprises said limiting member extending into said free-flow chamber in said free-flow chamber axial dimension from a region occupied by said housing tongue and along said free-flow chamber radial dimension in said impeller rotational direction, said limiting member axial extension also decreasing in length of extension into said free-flow chamber in said impeller rotational direction.

4,475,869

GAS TURBINE ENGINE AND SHAFT

Kenneth G. Davies, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 22, 1982, Ser. No. 436,334

Claims priority, application United Kingdom, Nov. 12, 1981, 8134109

Int. Cl.³ F01D *5/02*

U.S. Cl. 416—170 R **2 Claims**

1. A gas turbine engine comprising;

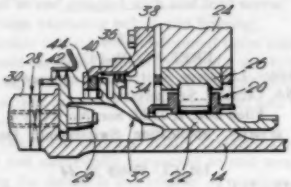
a drive shaft having an upstream end;

a front fan connected to said upstream end of said drive shaft for driven rotation thereby;

a roller bearing assembly supporting said upstream end of

said drive shaft, said roller bearing assembly including an inner race integrally fixed to said upstream end of said drive shaft, an outer race, and roller bearings therebetween, said inner race having an annular extension extending upstream therefrom, said annular extension having an outwardly turned annular shoulder intermediate ends thereof; and

non-rotary fixed structure supporting said outer race, said



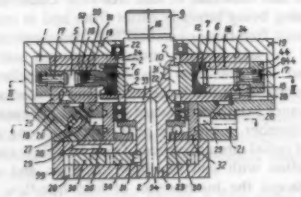
non-rotary fixed structure having an annular extension extending upstream of the same and having an inwardly turned annular shoulder axially aligned with and immediately upstream of said outwardly turned annular shoulder whereby upon occurrence of an excessive axial movement of said front fan and said drive shaft in an upstream direction, said inwardly turned annular shoulder and said outwardly turned annular shoulder abut each other and arrest said axial movement.

4,475,870

HYDRAULIC ARRANGEMENT

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Filed Aug. 19, 1980, Ser. No. 179,420
Int. Cl.³ F04B *23/10, 23/14*
U.S. Cl. 417—206 **2 Claims**



1. A hydraulic arrangement, including in combination, a housing, a rotary shaft revolvably borne in said housing, at least one eccenctric cam ring revolving in unison with said shaft when said shaft revolves, surrounding a portion of said shaft and forming a cylindrical outer face of equal radii around an axis which is parallel to the axis of said shaft but distanced therefrom by a first eccentricity; at least one cylinder block provided in said housing and facilitating at least one cylinder, at least one piston, at least one entrance port and at least one exit port to pass fluid into and out of said at least one cylinder when said at least one piston reciprocates in said at least one cylinder; while said housing also includes at least one first space and at least one second space, at least one inlet and at least one outlet; said second space is sealed and separated from said first space; said first space engages said at least one entrance port, said outlet communicates to said at least one exit port; said second space surrounds said at least one cam ring; said at least one piston is capable of partially entering said second space and engaging at least indirectly said outer face of said cam ring, and said outer face of said cam ring at least indirectly engages to guide at least partially the reciprocation-stroke of said at least one piston when said at least one piston reciprocates in said at least one cylinder,

wherein said first space is supplied with a first pressure and said second space is communicated to a space of a second pressure;

wherein said second pressure is substantially lower than said first pressure;

wherein said first pressure presses through said at least one entrance port into said at least one cylinder and against one end of said at least one piston,

wherein said piston is pressed by said first pressure towards said outer face of said eccentric cam ring and at least into indirect engagement with said outer face of said cam ring;

wherein a piston shoe is interposed between the head of said piston and said outer face of said cam ring;

wherein a minimum inner pressure valve is mounted in said piston and communicated to a passage which extends through said piston from said cylinder to said piston shoe,

wherein said inner pressure valve closes said passage through said piston at any pressure below the minimum setting pressure of said inner pressure valve but opens toward the piston shoe at any pressure exceeding said minimum inner pressure,

wherein said piston shoe is provided with at least one fluid pressure pocket and at least one unloading recess,

wherein said at least one fluid pressure pocket is communicated to said passage through said piston and to said inner pressure valve,

wherein said unloading recess is communicated by a respective passage to said second space in said housing,

wherein at least one of said fluid pressure pockets is closed radially by said outer face of said cam ring,

wherein said piston forms a piston head outwards of said cylinder and directed towards said piston shoe,

wherein said piston shoe forms a first slide face engaging said outer face of said cam ring and a second slide face which forms a bearing bed on the opposite end of said first slide face of said piston shoe,

wherein said bearing bed and its second slide face are forming a part of a hollow ball of equal radii around a swing cent;

wherein said piston head forms a head face of a configuration complementary to said second slide face and bearing bed with radii substantially equal to said radii and around said swing center,

wherein said piston head engages said bearing bed and said piston and piston shoe are capable of pivoting around said swing center,

wherein said first pressure presses said piston head against said bearing bed at closed position of said inner valve and maintains the engagement of said piston head and of said bearing bed, and,

wherein said cam at an other portion of the rotation of said cam and of said shaft slides with its outer face along said first slide face of said piston shoe, presses over said piston shoe and piston head said piston inwards in said cylinder, whereby said inner valve opens and permits pressure from said cylinder into said pocket,

whereby said piston supplies a flow of fluid of a fourth pressure through said exit port and said outlet out of said arrangement.

4,475,871

VARIABLE DISPLACEMENT COMPRESSOR

Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 2, 1982, Ser. No. 404,078
Int. Cl.³ F04B *1/26*
U.S. Cl. 417—222 **3 Claims**

1. An axial piston, variable displacement, wobble plate compressor comprising:

means defining a plurality of gas working spaces including suction and discharge ports in each space, and a corre-

sponding plurality of pistons, each positioned in one of said spaces to compress a fluid therein;

a drive shaft having a central, cylindrical portion disposed along a longitudinal axis, said cylindrical portion defining an annular slot in proximity to said gas working spaces, and at least one thrust flange member extending radially from said cylindrical portion, which thrust flange member defines a shoulder at the junction with said cylindrical portion and rearwardly extending flanges;

a drive plate assembly defining a surface which acts as a cam mechanism driven by said drive shaft, a lug means affixed to said mechanism and having a portion in spaced juxtaposition with said rearwardly extending flanges on said thrust flange member;

a wobble plate having a hub assembly and driven by said cam mechanism in a nutating path about the drive shaft axis;

a hinge ball insertable in said hub assembly and defining a bore to receive the drive shaft and be slidable thereon;

means operably connected between said wobble plate and the pistons to impart reciprocating drive to said pistons, the length of the piston stroke being a function of the angle at which said wobble plate is supported relative to the drive shaft axis;

pivot links having two ends and positioned between said rearwardly extending flange member and lug means, one of which ends is attached to said rearwardly extending flange members and the other end being attached to said lug means, which lug means is spaced from the drive shaft axis such that said cam mechanism is pivoted about the hinge ball at a point not coincident with said drive shaft axis, with no driving connection between said drive shaft and cam mechanism along said drive shaft axis, all torque being transmitted from said drive shaft to said cam mechanism through said lug means and pivot links;

wherein the improvement comprises a snap ring positioned in said drive shaft annular slot, a piston-stroke-increasing bias spring positioned about said drive shaft between said snap ring and said hinge ball, and a piston-stroke-decreasing spring mounted on said drive shaft between said hinge ball and said shoulder at the junction of said thrust flange member and the cylindrical portion of said drive shaft, which stroke-increasing spring and stroke-decreasing spring cooperate to maintain said wobble plate and hinge ball position to provide a predetermined piston stroke at an equilibrium position.

4,475,872

WATER PUMP AND GEAR BOX THEREFOR

Joan S. Foughty, Urbana, Ohio, assignor to Robbins & Myers, Inc., Dayton, Ohio

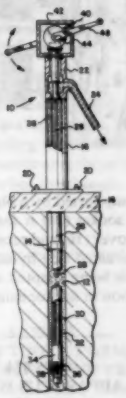
Filed Sep. 28, 1982, Ser. No. 425,154

Int. Cl.³ F04B *19/00*

U.S. Cl. 417—315 **7 Claims**

1. A water pump comprising a pump stand, a spout mounted on said pump stand for communication with the interior of said pump, a pipe communicating with the interior of said pump stand and extending downwardly toward an underground water supply, a rotary drive shaft supported by said pump stand and extending downwardly within said pipe, stator means supported by said pipe and communicating with said water supply, a pump rotor supported by said drive shaft and positioned within said stator means for cooperating therewith to pump water up said pipe to said pump stand and said spout, a gear box supported on said pump stand for applying a rotary driving motion to said drive shaft, an input shaft for applying a rotary driving motion to said gear box, and a means for rotation of said input shaft, said water pump characterized in that said gear box comprises:

first and second bevel gears mounted on said input shaft and spaced apart relation;



first clutch means for permitting relative rotary motion in a first direction between said input shaft and said first bevel gear while prohibiting relative rotary motion in a second direction opposite said first direction;

second clutch means for permitting relatively rotary motion between said input shaft and said second bevel gear in said second direction while prohibiting relative rotary motion therebetween in said first direction; and

a third bevel gear mounted fast on said drive shaft for driving contact with said first and second bevel gears whereby said drive shaft is rotated in a common direction by rotation of said input shaft in either of said first or second directions and is locked against rotation due to rotary forces upon said drive shaft in a direction opposite said common direction.

4,475,873

WET-MOTOR PUMP

Niels D. Jensen, and Kurt F. Nielsen, both of Bjerringbro, Denmark, assignors to Grundfos A/S, Bjerringbro, Denmark

Filed Feb. 4, 1982, Ser. No. 345,570

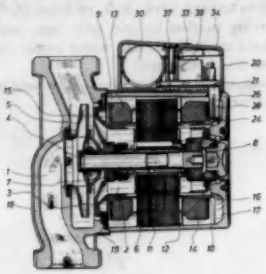
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105428

Int. Cl.³ F04B *35/04*; H02K *11/00*

U.S. Cl. 417—422 **1 Claim**

1. A wet-motor pump of compact design having a rotor with bearings utilizing a pumped liquid and comprising: a dry stator chamber (9) surrounding in an annular fashion a wet-rotor chamber (2) sealed from said dry stator chamber by means of a tube-shaped can (10); a stator stack of sheets (11); a connection box (20) mounted on a motor housing (17); a power cable to be connected for the supply of energy to a pair of winding bundles (13, 14) being extended from said stator stack of sheets being insertable in said connection box, and wherein the ends (22) of the wires of said winding bundles are connected to a plurality of winding terminals (23) which are situated at the

stator (11, 12, 15, 16) and insertable in the motor housing (17) as a unit; with the contacts (27) of a plug (21) capable of being inserted transversally to the axis of the rotor and being connected to said winding terminals, and that said plug, provided with a shaft (28) isolating the plug, is insertable in the stator chamber (9) through an opening (26) in the motor housing, wherein the pair of winding bundles on each side of the stator



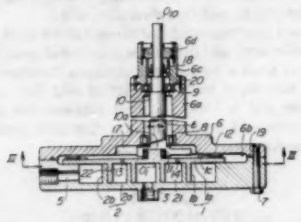
stack of sheets are supported by a plastic protecting cover (15, 16) and wherein a socket (24) is formed on a portion of said plastic protecting cover (16) and receives the plurality of winding terminals (23) situated side-by-side in a row, said plurality of winding terminals being adapted to mount the contacts (27) in the correct position in said opening (26) in the motor housing.

4,475,874

SCROLL FLUID APPARATUS WITH AXIAL SEALING FORCE

Eiji Sato, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 887,252, Mar. 16, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,548
Claims priority, application Japan, Mar. 20, 1977, 52-3339
Int. Cl.³ F04C *1/02*
U.S. Cl. 418—55 **6 Claims**



1. A scroll fluid apparatus comprising:

scroll means including a revolving scroll member and a stationary scroll member, each of said revolving scroll member and said stationary scroll member having an end plate and a wrap extending from said end plate and disposed in an upright position;

drive shaft means mounted for rotation about its center axis which is eccentric with respect to the center of said revolving scroll member so as to cause the revolving scroll member to revolve around said drive shaft means;

housing means formed therein with a housing chamber;

an Oldham's ring for preventing the revolving scroll member from revolving about its center and causing the same to revolve around said drive shaft means without changing its posture;

a suction port; and

an outlet port;

wherein the improvement comprises:

a mechanical seal mounted in a portion of said housing means through which said drive shaft means extends so as to provide a seal to said housing chamber; and

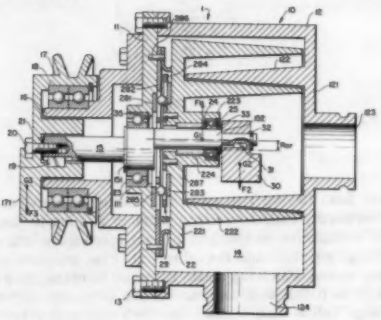
at least one small aperture formed in the end plate of one of said two scroll members for communicating said housing chamber with operating chambers of the scroll fluid apparatus in the process of compressing or expanding a fluid so as to keep the internal pressure of said housing chamber at a pressure level which is intermediate between the pressure at which the fluid is sucked into said operating chambers and the pressure at which the fluid is discharged therefrom, so that the fluid at the intermediate pressure level can force one scroll member tightly against the other scroll member to provide an axial seal thereto.

4,475,875

SCROLL TYPE FLUID DISPLACEMENT APPARATUS WITH BALANCE WEIGHT

Kazuo Sugimoto, Maebashi, and Kiyoshi Terauchi, Isesaki, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Oct. 12, 1982, Ser. No. 433,898
Claims priority, application Japan, Oct. 12, 1981, 56-162211
Int. Cl.³ F01C *1/02, 17/06, 21/00*
U.S. Cl. 418—55 **4 Claims**



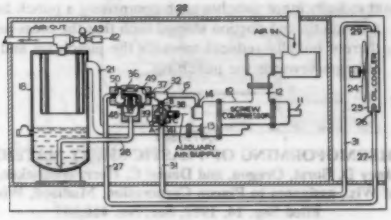
1. In a scroll type fluid displacement apparatus including a housing having an inlet port and an outlet port, a fixed scroll joined with said housing and having a first end plate from which a first wrap extends into an operative interior area of said housing, an orbiting scroll having a second end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets within said operative interior area, a driving mechanism, including a drive shaft rotatably supported by said housing, connected to said orbiting scroll to drive said orbiting scroll in an orbital motion, and rotation preventing means for preventing the rotation of said orbiting scroll so that the volume of the fluid pockets changes during the orbital motion of said orbiting scroll, the improvement comprising said driving mechanism including a crank pin axially projecting from an inner end of said drive shaft, said second end plate of said orbiting scroll having a centrally located opening, said crank pin being rotatably carried in said centrally located opening by a bearing and extending from said opening into a central area of said spiral elements, and a first balanceweight fixed on an axial outer end of said crank pin and located with said operative interior area of said housing to cancel dynamic unbalance caused by the orbiting motion orbital moving parts of the apparatus.

4,475,876

OIL PURGE SYSTEM FOR COLD WEATHER SHUTDOWN OF OIL FLOODED SCREW COMPRESSOR

Donald S. Olen, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 27, 1982, Ser. No. 453,517
Int. Cl.³ F04C 18/16, 29/02
U.S. Cl. 418—84 4 Claims



1. An oil circulating system for rotary fluid compressors, comprising

a heated enclosure,

a rotary screw-type compressor in said enclosure having a fluid inlet for receiving fluid to be compressed from the exterior of said enclosure, a fluid discharge for compressed fluid and an oil inlet for lubricating oil which mingles with and is discharged with the compressed fluid,

a separation tank in said enclosure connected to said fluid discharge for receiving discharged compressed fluid and oil from the compressor,

an oil cooler disposed on the outside of said enclosure and having an inlet and an outlet,

a first oil line means connecting said oil cooler inlet to said tank,

a second oil line means connecting said oil cooler outlet to said oil inlet of said compressor,

a source of compressed air,

valve means interposed in said second line means within said enclosure and including a flow control element having a first position of adjustment in which flow of oil is permitted in said second line means from said cooler to said compressor and a second position of adjustment preventing flow of oil in said second line means to said oil inlet of said compressor,

valve means in said second oil line means within said enclosure adapted for connection to said source of compressed air and having open and closed positions, when said last mentioned valve means is in its open position and connected to said source of compressed air, said compressed air being operative to force lubricating oil from said second line means, cooler and first line means to said tank, and

a temperature sensitive valve within said enclosure operatively associated with said first and second oil means automatically passing oil from said tank to said oil inlet of said compressor bypassing said cooler when the temperature of said oil is below a predetermined value.

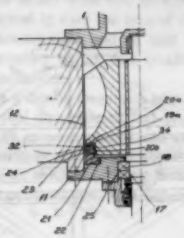
4,475,877

GLOBOID WORM MACHINE WITH METAL RING IN BEARING HOUSING

Bernard Zimmern, 6 New St., East Norwalk, Conn. 06855

Filed Jan. 11, 1983, Ser. No. 457,215
Claims priority, application France, Jan. 14, 1982, 82 00499
Int. Cl.³ F01C 1/24; F04C 27/00
U.S. Cl. 418—140 8 Claims

1. A volumetric machine of the type comprising a cylindrical screw which is provided with threads, is rotatably mounted inside a fixed casing and meshes with the teeth of at least one pinion-wheel, said casing being provided with at least one low pressure port and at least one high pressure port placed nearby the above-mentioned pinion-wheel, said screw comprising a shaft rotatably mounted in at least one bearing housing, said bearing housing being located in the casing close to the high pressure port, wherein said bearing housing carries a ring made



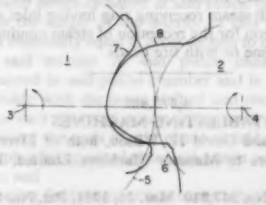
of a metal different from the metal of the screw and with a higher coefficient of thermal expansion, said ring being provided with a bore surrounding with a very small clearance , a cylindrical protuberance continuing the screw beyond the area of the screw which comprises the threads.

4,475,878

SCREW ROTOR WITH TOOTH FORM PRODUCED BY THERMAL DEFORMATION AND GEAR BACKLASH

Katsuhiko Kasuya; Hidetomo Mori; Mitsuru Fujiwara, and Tetsuzo Matsunaga, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,367
Int. Cl.³ F01C 1/16, 1/24
U.S. Cl. 418—201 12 Claims



1. A screw rotor of a screw compressor comprising a female rotor and a male rotor rotating about two axes parallel to each other while in meshing engagement with each other, the female and male rotors have a basic tooth form for enabling a meshing between the male and female rotors without any clearance therebetween during a normal temperature condition, one of the basic tooth forms of one of the male and female rotors is used for obtaining a first rotor tooth form produced by deformation due to a thermal expansion during an operation of the screw compressor; the first rotor tooth form is adapted to be used for generating a second rotor tooth form; and the second rotor tooth form is adapted to be used to obtain a further tooth form of the other of the female and male rotors which is a normal temperature tooth form of the second tooth form produced by deformation of the thermal expansion, whereby one of the basic tooth tooth forms and the further tooth form are the final version of the tooth forms of the respective rotors.

4,475,879

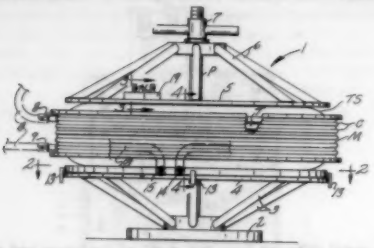
TIRE REPAIR APPARATUS

Lauren D. Young, 62 N. River Dr., and Robert S. Cameron, 1547 NW Rachel, both of Roseburg, Oreg. 97470

Filed Dec. 27, 1982, Ser. No. 453,615

Int. Cl.³ B29H *5/04, 5/16*

U.S. Cl. 425—22 **3 Claims**



1. An apparatus for simultaneously repairing sidewall and bead portions of an inflated tire during the molding of a tread band to the tire, said apparatus including,

upper and lower annular plate members adapted to be fixedly positioned adjacent the sidewall of a tire,

means confining said members against opening axial movement,

an annular structure defining a steam chamber said annular structure corresponding generally in diameter to said plate members, steam inlet and outlet means in communication with said steam chamber,

registration means retaining said annular structure in coaxial detachable registration with one of said annular plate members so as to be interposed between said one annular plate member and a tire sidewall for the application of heat to same in a combined sidewall repair and tread molding operation, and

a rim assembly including a pair of bead engaging circular rim members which may be secured to and supported by the beads of the tire, said rim members each having a steam receiving ring on its inner periphery defining a chamber for the reception of steam for application of heat to the inner periphery of one or both tire beads for the repair thereof, each steam receiving ring having inlet and outlet means thereon for the reception of steam conduits for the heating of one or both tire beads.

4,475,880

TABLETTING MACHINES

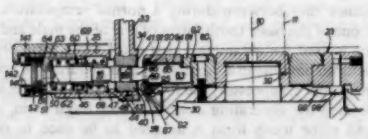
Jack Crossley, and David H. Wilson, both of Liverpool, England, assignors to Manesty Machines Limited, Liverpool, England

Division of Ser. No. 247,810, Mar. 26, 1981, Pat. No. 4,403,935. This application Jun. 30, 1983, Ser. No. 509,852

Claims priority, application United Kingdom, Mar. 27, 1980, 8010324

Int. Cl.³ B30B *7/00*

U.S. Cl. 425—353 **11 Claims**



7. In a tabletting machine in which powdered or granulated material to be tabletted is fed onto a concave, annular, part-spherical surface of a rotating die table so as to fill dies in the die table and be compressed into a tablet in each die between a pair of punches, one of the punches being subsequently withdrawn from the die and the other punch being pushed through the die to eject the tablet from the die; the punches operating in the dies radially of the axis of rotation of the die table, the radially inner punches being mounted on a rotatable hub which moves the radially inner punches in a circular path to enter and exit the dies;

a die having a part-spherical end face adapted to lie in the surface of the die table of the machine in use of the die; and

said radially inner punches each comprising a punch having a punch tip end portion shaped such that the cross-section thereof initially reduces towards the punch tip and then enlarges towards the punch tip.

4,475,881

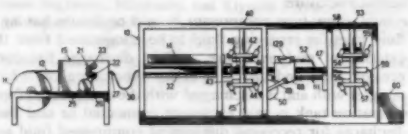
THERMOFORMING OF PLASTIC SHEET MATERIAL

Rodney D. Borst, Oregon, and Daniel C. Herr, Waunakee, both of Wis., assignors to Placon Corporation, Madison, Wis.

Filed Sep. 14, 1982, Ser. No. 418,087

Int. Cl.³ B29C *17/02*

U.S. Cl. 425—397 **5 Claims**



1. In a thermoforming machine of the type having an oven through which plastic sheet material is passed to soften the plastic, a forming station including mold portions which are adapted to form the softened plastic into a desired shape, stationary guide rails mounted on either side of the path of the plastic sheet which extend through the oven to the forming station, each of the guide rails having a slot therein into which the plastic sheet can pass, the guide rails having walls defining an internal cavity opening on the slot therein and including internal engagement walls extending away from the slot, the internal engagement walls being adapted and positioned to engage with inwardly facing abutment surfaces formed on the edges of the plastic sheet to prevent the sheet from slipping out of the slot in each guide rail, whereby the plastic sheet may be held within the guide rails to prevent substantial lateral movement of the sheet but allow it to move forwardly, and drive means for driving a plastic sheet held within the guide rails forwardly through the machine, the improvement comprising:

(a) sheet stretching guide rails mounted on either side of the path of the plastic sheet over the width of the mold portions, the sheet stretching guide rails being separated from the stationary guide rails and having a slot therein and internal engagement walls which are normally generally aligned with the slots and internal engagement walls in the respective adjacent stationary guide rails such that a plastic sheet with inwardly facing abutment surfaces formed at its edges will be passed between the stationary guide rails and the sheet stretching guide rails;

(b) means for mounting the sheet stretching guide rails for inward and outward movement;

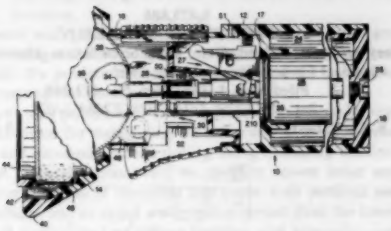
(c) means for moving the sheet stretching guide rails outwardly to outwardly displace the engaged inwardly facing abutment surfaces of the softened plastic sheet to stretch the sheet slightly before engagement of the plastic sheet by the mold portions and for moving the sheet stretching guide rails inwardly after the mold portions release the plastic sheet to a position at least as far inward as the stationary guide rails to permit forward movement of the sheet.

4,475,882

GAS MANTLE WITH ASPIRATED PILOT LIGHT

George P. Gruner, Andover, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 16, 1982, Ser. No. 408,551
Int. Cl.³ F21H 7/00
U.S. Cl. 431—111 3 Claims



1. A hand-held lighting device employing a mantle and powered by a combustible fuel, comprising:

a housing having a translucent portion and air entry means;

mantle mounting means disposed within said housing adjacent said translucent portion;

a pilot burner fixedly disposed within said housing adjacent said mantle mounting means;

a fuel chamber within said housing for storing a supply of said fuel;

means for supplying said mantle mounting means with a mixture of fuel from said fuel chamber and air from said air entry means;

means for supplying said pilot burner with a mixture of fuel from said fuel chamber and air from said air entry means;

ignition means for igniting said fuel and air mixture at said pilot burner;

a mantle fuel passageway connecting said mantle mounting means and said fuel chamber;

a pilot fuel passageway connecting said pilot burner and said fuel chamber;

first valve means for simultaneously controlling the flow of fuel from said fuel chamber to both said mantle fuel and pilot fuel passageways; and

second valve means disposed within said pilot fuel passageway downstream of said first valve means for controlling the flow of fuel to said pilot burner, said second valve means being coupled to said ignition means such that actuation of said ignition means opens said second valve means.

4,475,883

PRESSURE CONTROL FOR STEAM GENERATOR

Robert M. Schirmer, and William E. Thornberry, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 4, 1982, Ser. No. 354,565
Int. Cl.³ F23R 1/06
U.S. Cl. 431—158 12 Claims

1. Steam generator means, comprising:

(a) elongated combustor means adapted to burn a fuel in the presence of a combustion supporting gas to produce a flue gas at the downstream end of said combustor;

(b) fuel introduction means adapted to introduce said fuel into the upstream end of said combustor;

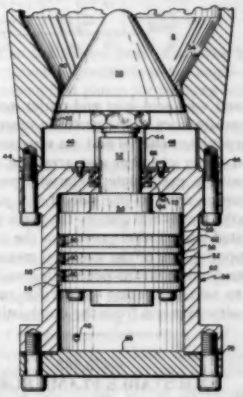
(c) combustion supporting gas introduction means adapted to introduce said combustion supporting gas into said upstream end of said combustor;

(d) water introduction means adapted to introduce water into said flue gas adjacent the downstream end of said combustor to produce a mixture of flue gas and water adjacent said downstream end of said combustor;

(e) elongated vaporizer means in open communication with said downstream end of said combustor and adapted to vaporize a major portion of said water to produce a mixture of flue gas and steam at the downstream end of said vaporizer;

(f) pressure control means adapted to discharge said mixture of flue gas and steam from said downstream end of said vaporizer, adapted to vary the area of the discharge opening of said downstream end of said vaporizer to thus control the pressure within said combustor and said vaporizer and, including;

(1) plug means slideably mounted adjacent said discharge opening in said downstream end of said vaporizer and adapted to be moved toward and away from said discharge opening in said downstream end of said vaporizer to form an annular opening between said plug and said discharge opening in said downstream end of said vaporizer,



(2) piston chamber means mounted adjacent and spaced from said plug and

(3) piston means mounted in said piston chamber, shorter than the length of the interior of said piston chamber and essentially equal in cross section to the cross section of said interior of said piston chamber, slideably mounted in said piston chamber and in fluid-tight relationship with the inner wall of said piston chamber to thus vary the void space within said piston chamber adjacent the ends of said piston as said piston slides;

(g) said plug being coupled to said piston to slide with said piston; and

(h) operating fluid introduction means adapted to introduce a pressurized operating fluid into said void space adjacent at least one end of said piston.

4,475,884

REVERSED FLOW FLUIDIZED-BED COMBUSTION APPARATUS

Jer-Yu Shang, Fairfax, Va.; Joseph S. Mei, and John S. Wilson, both of Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,598
Int. Cl.³ F23D 19/00
U.S. Cl. 431—170 7 Claims

1. A fluidized-bed combustion apparatus comprising:

a housing;

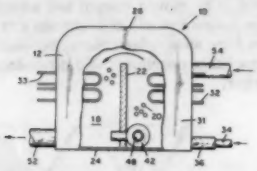
perforated grid means disposed in said housing for providing an upper chamber and a lower plenum chamber;

inlet means for conveying a fluidizing and combustion supporting medium into the plenum chamber for passage

through the perforated grid means into the upper chamber;

vertically oriented partition means disposed in said upper chamber and extending from a sidewall of said housing and terminating at a location adjacent to an oppositely disposed sidewall of said housing to provide a passageway between said oppositely disposed sidewall and the partition means for defining a horizontal generally U-shaped fluidized-bed combustion zone;

inlet and outlet means for respectively introducing solid combustible particulate material into the combustion zone and for discharging spent material from the combustion



zone and with said inlet and outlet means being disposed on opposite sides of the partition means;

solid particulate material and gas separating means disposed in said upper chamber and arranged to receive gas and combustible particulate material from a portion of the combustion zone on one side of said partition means near the outlet means and convey the particulate material when separated into another portion of the combustion zone on the opposite side of the partition means; and

discharge conduit means penetrating said housing and coupled to said separating means for receiving essentially particulate-free gas from the combustion zone.

4,475,885

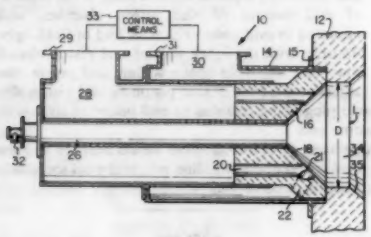
ADJUSTABLE FLAME BURNER

Harry P. Finke, Pittsburgh, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1983, Ser. No. 518,079

Int. Cl.³ F23M *9/00*; F23Q *9/00*

U.S. Cl. 431—182 **10 Claims**



1. An adjustable flame burner for an industrial furnace comprising:

a burner body having a central longitudinal axis and a baffle with a discharge face forming a forward wall of the burner body;

a first set of a plurality of spaced combustion sustaining gas apertures extending from a first air chamber through the baffle and positioned in a circular plane radially outward from and extending substantially parallel with said burner body axis;

a second set of a plurality of radially spaced combustion sustaining gas apertures extending from a second air chamber axially through the baffle at acute angles to the apertures of the first set and skewed with respect to an imaginary plane passing through said burner body axis, said apertures of the second set intersecting with the apertures of the first set at or substantially adjacent the discharge face; and

a fuel duct extending from a fuel source along said central axis and through the baffle terminating upstream of the intersection of the first and second set of apertures.

4,475,886

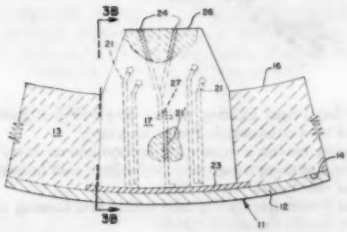
LIFTER FOR ROTARY KILN

Gary A. Tyler, Poland, Ohio, assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 1, 1983, Ser. No. 471,368

Int. Cl.³ F27B *7/14, 7/28*; F23M *5/02*

U.S. Cl. 432—118 **3 Claims**



1. In a rotary kiln comprising a cylindrical metal shell and a refractory lining on the interior thereof, said lining having an outer, cold face adjacent the metal shell and an inner, hot face, a limited portion of said lining extending inwardly of the hot face to form at least one lifter, each such lifter containing at least one imbedded anchor, the improvement wherein said anchor is a metal anchor attached to the metal shell of the kiln, and having a plurality of branches at its end remote from the kiln shell, said branches being located at a point closer to the metal shell than is the hot face of the refractory lining adjacent to the lifter, and wherein said anchor extends to the inner face of the lifter.

4,475,887

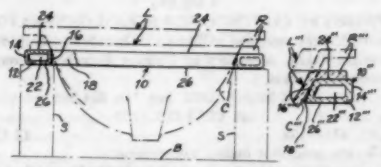
LAVATORY SETTER

Bryan D. Foster, Holden, Mass., and Del G. Stapleton, Marietta, Ga., assignors to Norton Company, Worcester, Mass.

Filed May 19, 1983, Ser. No. 496,170

Int. Cl.³ F27D *5/00*

U.S. Cl. 432—258 **11 Claims**



1. A refractory lavatory setter for supportingly engaging a mounting under surface of a peripheral mounting rim portion of predetermined configuration and size extending around adjacent an outer convex surface of a bowl of a rimless lavatory during firing thereof in a kiln comprising:

a continuous hollow integral slip case and fired refractory wall of predetermined cross sectional size and shape extending continuously around a bowl receiving opening of prescribed size and shape therein and having

an inner wall portion and inner surface adjoining and

defining the size and shape of the bowl receiving opening and having

at least an inwardly and downwardly extending surface portion thereof adapted to at least initially supportingly and slideably engage the outer convex surface of the bowl, and maintain the rim portion spaced from the setter during a first part of the firing cycle, shrinkage and gradual downward movement of the lavatory,

an outer wall portion and outer surface spaced from and extending around the inner wall portion and of substantially the predetermined configuration of the peripheral mounting rim portion of the lavatory,

a lower wall portion and lower surface, engageable by support means for maintaining the setter and lavatory thereon in and elevated position during firing extending between and integrally connected to opposite lower inner and outer portions of the inner and outer wall portions and surfaces, and an upper wall portion spaced from the lower wall portion and extending between and integrally connected to opposite upper inner and outer portions of the inner and outer wall portions and having

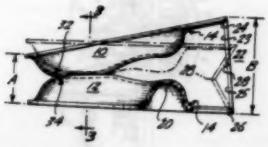
a continuous upper surface adapted for continuous mating supporting engagement with and maintaining the mounting under surface of the peripheral mounting rim portion substantially in a single plane during firing thereof in the kiln.

4,475,888

ANTERIORLY JOINED DENTAL TRAYS

Kenneth W. Gores, Bellevue Medical Dental Center, 1026-112th St. NE., Bellevue, Wash. 98004, and Carolyn C. Gores, 827 Lake St. South, Kirkland, Wash. 98023

Filed Apr. 19, 1982, Ser. No. 369,783
Int. Cl.³ A61C *9/00*
U.S. Cl. 433—42 **4 Claims**



1. Dental apparatus, comprising;

a pair of U-shaped concavo-convex, dentition troughs joined in upwardly open opposed substantially coplanar relation by a bridging member connected at each end to an anterior upper edge of one of said troughs;

said bridging member being provided with means establishing predesignated transverse folding locations;

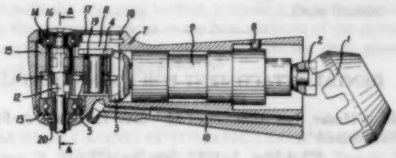
said folding locations being spaced apart a distance such that, when said bridging member is folded so that said troughs are brought into bottom-to-bottom juxtaposed relation, the anteriors of said troughs are maintained spaced apart a distance greater than the combined thickness of the juxtaposed convex posterior extremities of said troughs while the convex posterior extremities may be in contact with each other for ease of introduction of the apparatus into a person's mouth.

4,475,889

SPEED-INCREASING DEVICE FOR A DENTAL HANDPIECE

Philippe Garcia, 5, rue de la Mouillere, 25 000 Besancon, and Roger Gaillard, Busy 25320, Montferrand Le Chateau, both of France

Filed Nov. 18, 1982, Ser. No. 442,626
Claims priority, application France, Nov. 23, 1981, 81 22012
Int. Cl.³ A61C *1/02*
U.S. Cl. 433—103 **3 Claims**



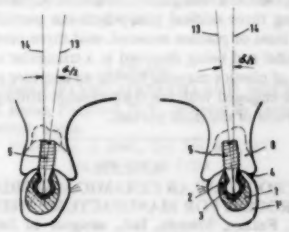
1. In combination an angle-drive head of a dental handpiece having a housing removably attachable to the angle-drive and having a speed-increasing first pinion for meshing with a drive pinion of the angle-drive, a shaft connected to the first-mentioned pinion extending axially in the head and having a speed-increasing second pinion connected to said shaft at an opposite end thereof for developing an output speed greater than said first pinion, a speed increasing device removably coupled to said head comprising a support housing, a speed-increasing third-pinion in said support housing for developing a speed greater than said second pinion and having an axis of rotation normal to the longitudinal axis of said shaft and normal to the axis of rotation of the first and second pinions, a speed-increasing fourth pinion coupled to the same axis of rotation as said third pinion, a dental tool-receiving jaw in said support housing having an axis of rotation parallel to the axis of rotation of speed-increasing third and fourth pinions, and means for coupling the dental tool-receiving jaw to said speed-increasing fourth pinion for being rotationally driven therefrom.

4,475,890

RETAINER ELEMENT FOR A DENTAL PROSTHESIS

Gerhard Heidelbach, Marktplatz 6, D-8700 Würzburg, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,862
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **15 Claims**



1. A retainer element for a dental prosthesis that is releasably insertable into an artificial recess having an undercut portion formed in a jawbone comprising:

(a) a retainer body threadingly attachable to the dental prosthesis such that the longitudinal portion of the retainer body relative to the dental prosthesis may be adjusted by rotating the retainer body with respect to the dental prosthesis;

(b) a conical shaft extending from a first end of the retainer body a length sufficient to enable the conical shaft to

extend into the recess formed in the jawbone, the cross-sectional diameter of the conical shaft decreasing from its maximum value adjacent the retainer body in a direction away from the retainer body; and,

(c) an enlarged, thickened head portion formed on the distal end of the conical shaft such that it may be located in the undercut portion of the artificial recess formed in the jawbone, the enlarged head portion having a maximum diametrical dimension measured in a plane extending generally perpendicular to a longitudinal axis of the retainer body no greater than the maximum diameter of the conical shaft.

4,475,891

DENTAL ATTACHMENT FOR FIXING DENTAL PROSTHESES

Helmut Hader, Les Allées 25, CH - 2300 La Chaux-de-Fonds, Switzerland

Filed Mar. 3, 1983, Ser. No. 471,674

Claims priority, application Switzerland, Mar. 31, 1982, 1977/82

Int. Cl.³ A61C *13/22*

U.S. Cl. 433—181 **2 Claims**

1. A dental attachment for fixing dental prosthesis to healthy teeth, comprising a male portion which can be rigidly fixed to a healthy tooth and a female portion which is fixed to the dental prosthesis, the male portion comprising two pins which are adapted to be secured by one of their ends in a healthy tooth, the other end of each of said pins having a head portion which is retained in an opening provided in the male portion by means of a plate having a T-shaped slot through which the pins extend, the thickness of the head portions of the pins being less than the depth of the opening, the male portion having a coupling portion having three frustoconical drillings with their axes parallel, the drillings flaring outwardly upwardly and being disposed in a triangular configuration, the female portion comprising three conical pins which are partially embedded within a mass of plastics material, said three pins having their axes parallel and being disposed in a triangular configuration, the mass of plastics material having an aperture permitting the pins to be engaged with the frustoconical drillings of the coupling portion of the male portion.

4,475,892

MICROCELLULAR CERAMIC MATERIAL AND PROCESS FOR MANUFACTURE THEREOF

Frank R. Faunce, Muncie, Ind., assignor to Jaff Investment Company, Muncie, Ind.

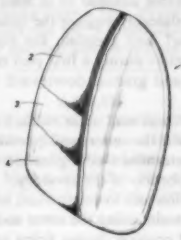
Filed Oct. 13, 1982, Ser. No. 434,067

Int. Cl.³ C09K *3/00*

U.S. Cl. 433—212 **15 Claims**

1. A thin microcellular ceramic laminate dental veneer for attachment to the labial surfaces of the teeth of a dental patient, said veneer comprising:

a multiplicity of fibers composed of crystalline ceramic material, said crystalline ceramic fibers being positioned in side-by-side, generally parallel relation establishing lines of contact with adjacent fibers along the length thereof, said fibers being heat fused to adjacent fibers at the lines of contact therebetween to form a porous mass, said ceramic fibers collectively defining a thin tooth shaped layer surface of said laminate veneer for covering the labial surface of a human tooth.



4,475,893

POWER TRANSMISSION FOR TWO-WHEELED VEHICLE

Nobuo Anno, Urawa; Haruki Okui, Wako; Kuniyuki Yamamoto, Kodaira, and Kunio Miyazaki, Oimachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

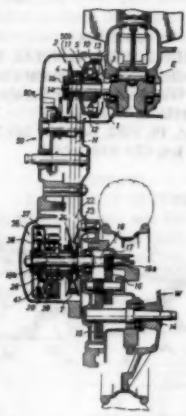
Continuation of Ser. No. 151,622, May 20, 1980, Pat. No. 4,345,664. This application Aug. 12, 1982, Ser. No. 407,431

Claims priority, application Japan, May 23, 1979, 54-63642

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.³ F16H *55/52, 9/00, 11/00*

U.S. Cl. 474—13 **6 Claims**



1. A power transmission for a two-wheeled motorcycle, comprising:

(a) an engine;

(b) a drive shaft driven by said engine;

(c) a variable-diameter drive pulley mechanism connected to said drive shaft;

(d) a variable-diameter driven pulley mechanism;

(e) a V-belt extending around said drive and driven pulley mechanism for operative connection therebetween;

(f) clutch means operatively connected with said driven pulley mechanism;

(g) a driven shaft coaxially supporting said driven pulley mechanism and said clutch means;

(h) a wheel driven by said driven shaft, said wheel being

disposed on the same side of the power transmission mechanism as said engine;

(i) said drive pulley mechanism including an axially movable member and an axially fixed member, disposed on the side closest to said engine and on the opposite side with respect to said V-belt, respectively, said members supporting said V-belt therebetween;

(j) said driven pulley mechanism including an axially movable member and an axially fixed member, disposed on the side closest to said clutch means and on the opposite side with respect to said V-belt, respectively, said members supporting said V-belt therebetween;

(k) said clutch means comprising a centrifugal clutch including an outer member connected to said driven shaft, and a drive plate integrally connected to said driven pulley mechanism, said drive plate including an element for frictionally engaging said outer member upon actuation of said element under centrifugal forces;

said axially fixed member of said drive pulley mechanism being retained on said drive shaft by fastening means; and

said V-belt being replaceable by removing said fixed member of said drive pulley mechanism while said movable member of said drive pulley mechanism remains connected to said drive shaft.

4,475,894

FRONT SPROCKET WHEEL HAVING CHAIN GUARD FOR BICYCLES

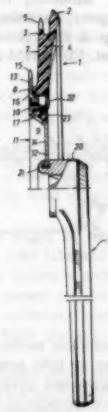
Yasushi Sugino, Nara, Japan, assignor to Sugino Cycle Industries, Ltd., Osaka, Japan

Filed May 7, 1982, Ser. No. 375,825

Claims priority, application Japan, May 27, 1981, 56-78255[U]

Int. Cl.³ B62J *13/00*

U.S. Cl. 474—144 **4 Claims**



1. A front sprocket wheel for a bicycle wherein an inner gear, an outer gear diametrically larger than the inner gear and a chain guard diametrically larger than the outer gear are arranged concentrically with a pedal crankshaft and spaced apart from one another axially of the crankshaft, the sprocket wheel comprising an annular member including the chain guard and the outer gear integral therewith, and a plate member having the inner gear; the annular member being formed integrally with connectors interconnecting the chain guard and the outer gear and with support arms centripetally extending from the connectors and arranged at a spacing circumferentially of the annular member, each of the support arms having on one side thereof a chain receiving guide surface continuous and flush with the corresponding surface of the outer gear and being integrally formed at its inner end with a base portion projecting from the guide surface, an inner end face of the each support arm serving as an engaging surface inclined toward the base portion; the plate member being in the form of an integral plate including a boss portion fixed to the crankshaft with a shaft end crimped and secured thereto, the inner gear as positioned around the boss portion and connecting arms interconnecting the boss portion and the inner gear and positioned in corresponding relation to the support arms, each of the connecting arms having a mount portion fitted over and fixed to the base portion of the support arm and a support portion extending obliquely from the mount portion and in engagement with the engaging surface, extending portions extended from the support portions to the boss portions of the connecting arms being positioned substantially on the same plane as defined by the connectors.

4,475,895

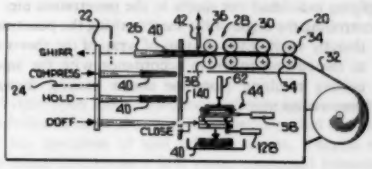
SAUSAGE CASING AUTOMATIC CLOSING SYSTEM

Thomas W. Martinek, Covington, Ind., assignor to Teepak, Inc., Chicago, Ill.

Filed Nov. 14, 1979, Ser. No. 94,270

Int. Cl.³ A22C *13/00*

U.S. Cl. 493—259 **14 Claims**



1. A strand gripper comprising a pair of axially elongated jaws defining in an open state thereof a receptacle for a strand to be closed, and means including a fluid cylinder for moving said jaws in plane together to grip the strand positioned therein, resilient means urging said jaws apart to a widely separated state for releasing the largest intended strand; first fluid supply means having a first pressure means, valve means for coupling said first fluid supply to said fluid cylinder for moving said jaws together against the resistance of said resilient means to said open state defining said strand receptacle, second fluid supply means having a second pressure higher than said first pressure, and valve means for coupling said second fluid supply to said fluid cylinder to further move said jaws together to a strand gripping position.

4,475,896

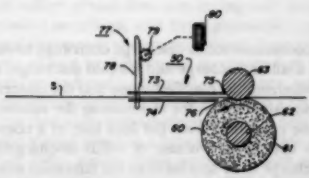
CURLING/DECURLING METHOD AND MECHANISM

Sudarshan S. Bains, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1981, Ser. No. 326,722

Int. Cl.³ B31F *7/00*

U.S. Cl. 493—454 **5 Claims**



1. A sheet curling mechanism comprising:

means supplying individual cut sheets

a compliant roller having a soft, pliable material thereabout,

a curling roller having a radius of curvature smaller that that of said compliant roller and arranged in parallel therewith, said curling roller having a non-compliant surface and arranged to form a penetration nip with said compliant roller, said penetration nip being adapted to decurl the individual cut sheets having a curl impressed thereon and passing therethrough,

guide means arranged adjacent the sheet exiting side of said nip for directing the angle of exiting of the sheets from said nip, and

means for varying the orientation of said guide means for varying the angle of exiting of the sheets thereby controlling the amount of wrap of the sheets relative to said curling roller.

4. The method of curling sheets in a curling mechanism having a curling roller with a non-compliant surface and a compliant roller having a radius larger than that of the curling roller, the latter roller being arranged in parallel with the curling roller penetrating the surface of the compliant roller to form a penetration nip therewith through which individual cut sheets are directed for curling the same, comprising the steps of supplying individual cut sheets to the penetration nip, and:

controlling the angle of the sheets exiting the penetration nip thereby varying the amount of wrap of the sheets relative to the curling roller, in accordance with the amount of curling resulting from the sheets passing through the penetration nip.

4,475,897

METHOD OF AND APPARATUS FOR OPTIMIZING THE CLARIFIED PHASE AND CONCENTRATION OF SOLIDS IN A CONTINUOUS SOLIDS-DISCHARGE CENTRIFUGE

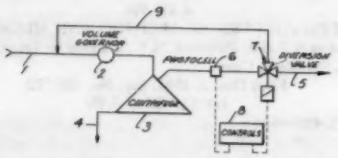
Werner Bradtmöller, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,755

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 3228074

Int. Cl.³ B04B *11/00*

U.S. Cl. 494—35 **5 Claims**



3. In a continuous solids-discharge centrifuge having a liquid feed line, a solids discharge and a liquid discharge, an apparatus for optimizing the clarified phase and the concentration of solids comprising: means for maintaining the volume of liquid fed into the centrifuge from the feed line, at a constant level; means for controlling volume of solids discharged from the solids discharge to be smaller than the minimum solids volume in the feed line; means for monitoring the turbidity of the clarified liquid in the liquid discharge; and means for returning liquid from liquid discharge to the feed line when the turbidity of the clarified liquid is greater than a predetermined value.

4,475,898

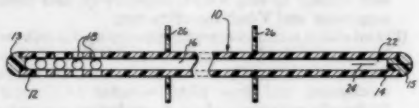
FETAL VENTRICULO-AMNIOTIC SHUNT

Robert A. Brodner, Paoli, Pa.; Robert S. Bley, Santa Barbara, and Ray H. Dormandy, Jr., Goleta, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill., a part interest

Filed Apr. 26, 1982, Ser. No. 371,756

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—9 **12 Claims**



1. A fetal ventriculo-amniotic shunt comprising:

a flexible tubular integral body having a lumen forming a fluid-flow passageway extending through the tubular body;

the tubular body having a proximal end with provided openings extending into the lumen and having a distal end;

plug means on the distal end for providing a perforable and self-sealing barrier to fluid flow;

fluid-flow means positioned on the distal end for permitting fluid flow from the lumen; and

positioning means on the tubular body which extends outwardly of the tubular body for providing placement fixation when the shunt is introduced into a fetus.

4,475,899

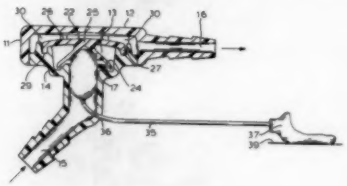
SHUNT VALVE AND METHOD OF USE

A. Bromley Muller, Kinnelon, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Sep. 3, 1982, Ser. No. 414,990

Int. Cl.³ A61M *27/00*

U.S. Cl. 604—9 **15 Claims**



1. An operable implantable ascites shunt valve comprising:

a housing containing an inlet conduit for receiving ascites fluid from the peritoneal cavity of a patient, an outlet conduit in fluid communication with said inlet conduit for delivering the ascites fluid into the vascular system of the patient and a valve seat positioned intermediate said inlet conduit and said outlet conduit;

a normally closed valve movably positioned in said housing resting against said valve seat and adapted to move away from said valve seat in response to fluid pressure in said inlet conduit to allow fluid flow between said inlet conduit and said outlet conduit;

a normally collapsed expansible balloon positioned in said inlet conduit and, when expanded, adapted to contact said valve to lift same from said valve seat;

a flexible tube connected at one end to and in fluid communication with said balloon, said tube exiting said housing through a fluid-tight orifice in said inlet conduit;

a flexible normally expanded reservoir connected to and in fluid communication with the other end of said tube, said

reservoir when implanted in the patient being subcutaneously accessible to the patient; and

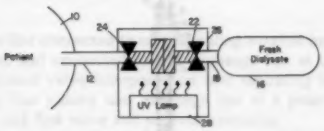
a quantity of fluid filling the volume described by and transferable among said balloon, said tube and said reservoir, whereby manual compression of said normally expanded reservoir is adapted to expand said balloon.

4,475,900

METHOD OF PERITONEAL DIALYSIS INVOLVING ULTRAVIOLET RADIATION OF DIALYSIS APPARATUS

Robert P. Popovich, 2928 Kassarine Pass, Austin, Tex. 78704, and Jack W. Moncrief, 3633 West Lake, Austin, Tex. 78746

Filed Jun. 5, 1981, Ser. No. 270,800
Int. Cl.³ A61M 3/00
U.S. Cl. 604—28 **20 Claims**



1. A method of exchanging spent dialysis fluid for fresh dialysis fluid in the peritoneal cavity of a patient undergoing peritoneal dialysis treatment, wherein an indwelling catheter is surgically implanted in the peritoneal cavity of the patient and extends through the abdominal wall of the patient, said catheter connected to an access tube, said access tube having a connector attached to the external end of said access tube with a removable cap thereon, comprising the steps of:

(a) closing the access tube at a point adjacent the access tube connector;

(b) removing the cap from the access tube connector;

(c) connecting fluid drainage apparatus to the access tube, the drainage apparatus including an empty container, a container outlet tube, an inlet tube connector adapted for connection to the access tube connector, and closure means on the container inlet tube adjacent the container inlet tube connector;

(d) irradiating a potential contamination zone between the closure means on the access tube and the closure means on the container inlet tube with ultraviolet light to kill microbes in said zone;

(e) opening the closure means on the access tube and the closure means on the inlet tube and effecting drainage of dialysis fluid from the patient's peritoneal cavity;

(f) closing the closure means on the access tube and the closure means on the container inlet tube;

(g) disconnecting the fluid drainage apparatus from the access tube;

(h) connecting fluid infusion apparatus to the access tube, the infusion apparatus including a container of fresh dialysis fluid, a container outlet tube, a container outlet tube connector adapted for connection to the access tube connector, and a closure means on the container outlet tube adjacent the outlet tube connector;

(i) irradiating a potential contamination zone between the closure means on the access tube and the closure means on the container outlet tube with ultraviolet light to kill microbes in said zone;

(j) opening the closure means on the access tube and the closure means on the container outlet tube and effecting an infusion of fresh dialysis fluid into the patient's peritoneal cavity;

(k) closing the closure means on the access tube after infusion of the fresh dialysis fluid; and

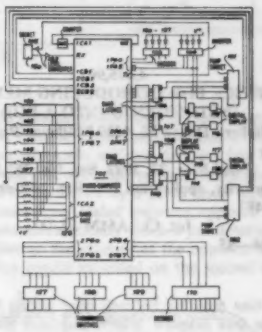
(l) disconnecting the fluid infusion apparatus and placing the cap on the access tube connector.

4,475,901

APPARATUS FOR IMPROVING BLOOD SUGAR CONTROL IN DIABETICS

Edward W. Kraegen, Bondi Junction; Leslie Lazarus, St. Ives; David J. Bell, Strathfield, and Donald J. Chisholm, Roseville, all of Australia, assignors to The Garvan Research Development Ltd. and The Commonwealth of Australia, both of, Australia

Filed Nov. 6, 1981, Ser. No. 318,775
Int. Cl.³ A61M 5/00
U.S. Cl. 604—67 **10 Claims**



1. A hybrid open loop/closed loop infusion system comprising an infusion means and a control means connected thereto to control the operation of said infusion means, wherein said infusion means comprises a first pump connected between a first diabetic control liquid reservoir and a tissue access system adapted to be connected to the body of a patient whereby a first diabetic control liquid from said reservoir is infused into said body via said access system; and a second pump connected between a second diabetic control liquid reservoir and said access system whereby a second diabetic control liquid from said second reservoir is infused into said body via said access system; and wherein said control means comprises a basal rate means, a meal rate means, a hyperglycaemic rate means, a hypoglycaemic rate means, a patient blood data entry means and a patient factor entry means; said basal rate means operating said first pump in an open loop mode at a base rate corresponding to an anticipated assessed basal metabolic requirement of said patient, said meal rate means increasing the open loop mode operation of said first pump by predetermined amounts over a predetermined time corresponding to anticipated ingestion of food by, or physical activity of, said patient, said patient blood data entry means being adapted to receive and store patient blood data derived from at least one of a plurality of successive patient blood samplings each taken after an interval of the order of one hour since the previous patient blood sampling and operating said first pump in a quasi-closed loop feedback mode at a first rate dependent upon said blood data but between a predetermined maximum first rate and a predetermined minimum first rate, said patient being able to be infused with safety at said first rate during said interval between successive samplings, said hyperglycaemic rate means operating said first pump at a predetermined hyperglycaemic rate in excess of said predetermined maximum first rate and operating said second pump at a zero or low rate, said hypoglycaemic rate means operating said first pump at a zero rate or a low rate less than said predetermined minimum first rate and operating said second pump at a hypoglycaemic rate, and said patient factor entry means being associated with said data entry means and adapted to receive and store a patient factor which varies from individual patient to individual patient; said predetermined maximum first rate and said predetermined minimum first rate controlled by said data entry means being

adjusted by said patient factor entry means in accordance with said patient factor.

4,475,902

DEVICE FOR INTRODUCING MEDICAL INSTRUMENTS INTO A BODY

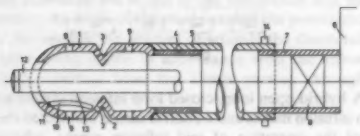
Werner Schubert, Dohne 32, 4330 Mülheim/Ruhr, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,117

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111497

Int. Cl.³ A61M 25/00

U.S. Cl. 604—95 7 Claims



1. Apparatus for use in the delivery of a medical instrument into an opening in a living organism, said apparatus being intended for insertion into the opening and comprising:

a tip portion, said tip portion having a cylindrical body portion and a generally hemispherically-shaped forward end which extends from said body portion, said body portion having a longitudinal axis and an inner diameter which is greater than the outer diameter of the medical instrument to be delivered therethrough, said tip portion being provided with a circumferential recess in the exterior surface of the side wall of said body portion, said recess being displaced from said tip portion forward end, said tip portion forward end being provided with an opening commensurate in size and shape with the cross-section of the medical instrument to be delivered, the medical instrument being mounted in said opening in said tip portion forward end;

an internal chamber, said chamber being in part defined by said tip portion;

a plurality of nozzles for establishing fluid communication between said recess in the exterior surface of said body portion and said internal chamber, said nozzles having axes which are angularly oriented with respect to said longitudinal axis whereby fluid discharged therefrom will be directed outwardly and rearwardly with respect to said tip portion to produce a reactive force component which urges said apparatus in the direction of further insertion of said tip portion, the discharge ends of said nozzles being recessed with respect to the exterior surface of said tip portion body portion and defining a plane which is generally transverse to said longitudinal axis;

tubular support means for said tip portion, said support means defining an extension of said internal chamber and coupling said internal chamber to a source of pressurized fluid; and

means for causing dilation of the opening into which the apparatus is inserted.

4,475,903

DISPOSABLE HYPODERMIC SYRINGE

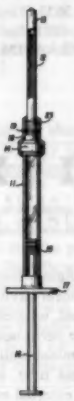
Johannes E. Steenhuisen, and Jan van Dijk, both of Oist, Netherlands, assignors to Duphar International Research B.V., Netherlands

Continuation of Ser. No. 400,105, Jul. 20, 1982, abandoned. This application Oct. 19, 1983, Ser. No. 542,568

Claims priority, application Netherlands, Jul. 23, 1981, 8103476

Int. Cl.³ A61M 5/00

U.S. Cl. 604—111 7 Claims



1. A disposable hypodermic syringe designed to allow a user of the syringe to easily and accurately determine if the sterility of the syringe has been compromised, said syringe including:

a barrel having a front open end and a rear open end, said barrel being adapted to receive a piston that is movable in the barrel and seals same, said piston being adapted for connection to a piston rod inserted through the rear open end of the barrel;

a needle mount provided at the front open end of the barrel, said needle mount having a narrowed sleeve-like portion at an end remote from the barrel, said sleeve-like portion having an injection needle connected thereto;

a needle guard having a thickened open end that is detachably connected to the sleeve-like portion of the needle mount in a functionally clamping manner, thereby achieving a sterile sealing of the needle; and

a sealing member adapted to seal the connection between the needle mount and the needle guard in a manner such that breakage of the seal is easily and accurately detectable by a user of the syringe, said sealing member comprising a sleeve of shrinkable plastic sheet disposed around the connection between the needle mount and the needle guard in a manner such that reconnection of the needle guard to the needle mount after initial removal of the needle guard is substantially prevented, said sleeve having a first end shrunk around the needle guard and a second end shrunk around the needle mount and optionally also around the barrel of the syringe.

4,475,904

FAST RESPONSE VACUUM ASPIRATION COLLECTION SYSTEM

Carl C. T. Wang, San Leandro, Calif., assignor to Medical Instrument Dev. Labs., Inc., San Leandro, Calif.

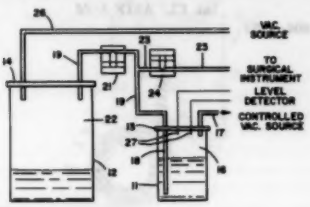
Filed Dec. 29, 1982, Ser. No. 454,470

Int. Cl.³ A61M 1/00

U.S. Cl. 604—119 14 Claims

1. A fast response vacuum aspiration collection system, comprising an aspiration surgical instrument a pair of sealed

collection containers, one container having a significantly smaller volume than the other, separate vacuum connected to each of said containers individually, an exchange line connected between said containers for open flow communication therebetween, a first valve interposed on said exchange line, an



aspiration line connected to said aspirating surgical instrument at one end and connected to said exchange line at the other end, a second valve interposed on said aspirating line, said aspirating line joining said exchange line at a point located between said first valve and said one container.

4,475,905

INJECTION DEVICE

Anders B. Himmelstrup, 1333 Chelmsford St., St. Paul, Minn. 55108

Filed Sep. 30, 1982, Ser. No. 429,968
Int. Cl.³ A61M 5/00
U.S. Cl. 604—208 **5 Claims**

1. A device for delivering a plurality of preselected doses of a drug from a loaded syringe having a plunger at a first end and a cannula at a second end, the device comprising:

a sleeve having a first opening and a cavity sufficiently large to house the syringe and a second opening sufficiently small to retain the syringe while permitting the cannula to extend therethrough and a slotted track having a plurality of staggered longitudinally positions slot portions and transversely positioned slot portions with each transversely positioned slot portion communicating with two longitudinally positioned slot portions;

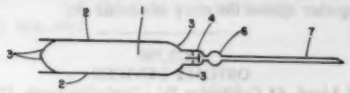
a plunger-engaging cap telescopically movable within the sleeve and having a first open end and a plunger cavity for housing the plunger and a second closed end for engaging an end of the plunger and an outwardly extending pin for following the track, placing the sleeve and the plunger cap in a cooperating relationship so that when the syringe is loaded only a single preselected dose of the drug is injectable through the cannula when the plunger cap is pushed inwardly into the cavity of the sleeve the pin follows a longitudinal slot and stops at a transverse slot leaving any remaining amount of the drug within the syringe and placing the sleeve and plunger cap in subsequent cooperation for delivering subsequent preselected doses from the same syringe by moving the pin along the transverse slot until the pin enters a next longitudinal slot.

4,475,906

PARTIALLY FLEXIBLE INJECTION SYRINGE DEVICE WITH PRESSURE RELEASE VALVE OR SPECIAL BREAKABLE SEAL

Günter Holzner, Rue Montfalcon, 8, CH - 1227 Carouge, Switzerland

Filed Sep. 13, 1982, Ser. No. 417,628
Int. Cl.³ A61M 5/00
U.S. Cl. 604—212 **18 Claims**



1. An injection syringe device, said device comprising:

(a) an elongate flexible plastic bag, said bag having at least two opposite side walls, said bag having a first and second ends, with said first end being permanently sealed and said second end being closed by a three layer breakable seal having a foam layer sealed between opposite side walls which breaks automatically when a pre-determined pressure is applied to the exterior of the opposite sidewalls;

(b) an injection needle mounted on the second end of the bag;

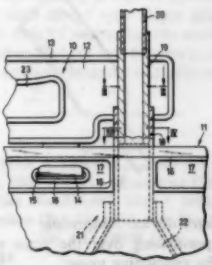
(c) an elastic plastic bulb inserted between said breakable seal and said injection needle, wherein said plastic bulb may be compressed prior to puncture to enable blood to be withdrawn when said bulb is released.

4,475,907

BODY SECRETION COLLECTING DEVICE WITH IMPROVED LIQUID CONDUIT CONNECTION BETWEEN CONTAINER AND HOLDER

Karl-Friedrich Voges, Melsungen, Fed. Rep. of Germany, assignor to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Apr. 28, 1982, Ser. No. 372,740
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131378
Int. Cl.³ A61M 1/00
U.S. Cl. 604—322 **9 Claims**



1. A body liquid secretion collecting device comprising:

a secretion collecting container holder means from which a secretion collecting container means is suspended having a rigid holder pipe fixedly joined thereto, the pipe having a lower end of constant outer diameter and an exposed upper end, the pipe being integrally formed vertically on a front face of the holder means and forming a single unit with said holder and with said pipe lower end having a substantially cylindrical outer surface; and

a secretion collecting container means, adapted to be movably and replaceably directly suspended from the holder means, having a cylindrical tube means fixedly joined to

the container means with an end in the container and with an inlet end, extending out of the container means, having a substantially constant inner diameter such that it is fluid sealably connectible telescopically to the holder pipe lower end and movable longitudinally while the tube inlet end inner surface maintains sealing contact with the essentially cylindrical outer surface of the pipe lower end thereby maintaining the fluid seal during vertical movement and displacement of the bag while being filled with body liquids, and with the tube and the pipe being sealed together against the entry of outside air.

4,475,908

OSTOMY DEVICES

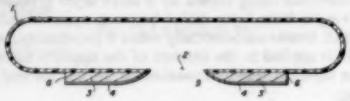
Ronald Lloyd, 63 Cambridge Rd., Sawbridgeworth, Hertfordshire, England

Filed Aug. 5, 1981, Ser. No. 290,160

Claims priority, application United Kingdom, Aug. 7, 1980, 8025827

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—339 **5 Claims**



1. An ostomy bag device which comprises an ostomy bag having an aperture adapted to receive the stoma of a patient, an apertured adhesive mount bonded to the bag about said aperture, said adhesive mount comprising a layer of a moisture vapour transmitting plastics foam and a layer of a moisture vapour transmitting pressure sensitive adhesive.

4,475,909

MALE URINARY DEVICE AND METHOD FOR APPLYING THE DEVICE

Melvin I. Eisenberg, 4080 Morrison Dr., Gurnee, Ill. 60031

Filed May 6, 1982, Ser. No. 375,660

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—349 **24 Claims**

1. A male urinary device comprising:

a sheath for positioning over the penis and including an outlet end for evacuating urine;

a cushioning means for interposing between the sheath and the penis and including a seat and at least two arms, one of said arms extending outward from one side of the seat and the second of said arms extending outward from the opposite side of the seat, said one arm being wrapped around the penis in one direction and said second arm being wrapped around the penis in the opposite direction, said cushioning means being wrapped around the circumference of the penis without either of said arms overlapping said seat or the other of said arms; and

each of said arms including an inner edge, the inner edges of said arms being opposed and in contact with each other when said arms are wrapped.

4,475,910

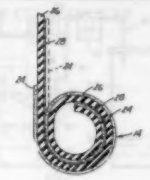
MALE CONDOM CATHETER HAVING ADHESIVE TRANSFER ON ROLLER PORTION

Anthony J. Conway; Peter B. Conway, both of Chatfield, and Philip J. Conway, Stewartville, all of Minn., assignors to Mentor Corporation, Minneapolis, Minn.

Filed Oct. 2, 1981, Ser. No. 307,792

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—352 **5 Claims**



1. A male condom catheter designed to be connected to a urine collection means and comprising a thin cylindrical sheath member of resilient material rolled outwardly upon itself to form consecutively larger rolls, said sheath member having an outer surface and an inner surface designed to engage a penis when the catheter is unrolled, and

the outer surface of the sheath member having prior to the rolling thereof a layer of pressure sensitive adhesive over a substantial portion thereof with a release layer between said adhesive and the outer surface of the sheath member so that as the sheath member is rolled up the pressure sensitive adhesive on the outer surface is in direct contact with the inner surface of an adjacent roll so that as the sheath member is unrolled the adhesive on the outer surface is transferred to the porton of the inner surface in engagement with the outer surface, without rolling the catheter inside out, to cause the inner surface to adhere to the penis over which the sheath is placed.

4,475,911

ABSORBENT DEVICES

Dale A. Gellert, Aurora, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 13, 1981, Ser. No. 253,426

Int. Cl.³ A61F *13/16*

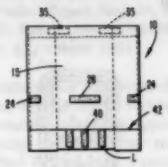
U.S. Cl. 604—367 **3 Claims**

1. A catamenial pad comprising an absorbent, unbonded array of fibers encased between a fluid pervious topsheet and a fluid impervious backsheet wherein said fibers are non-absorbent, hydrophilic, resilient, moisture insensitive, from about 0.75 to about 6 denier, from about 0.6 to about 7.6 centimeters long, and are crimped; and wherein said topsheet comprises an apertured hydrophobic film having a caliper less than about 0.075 centimeter and an open area of at least about 35% wherein less than about 25% of said apertures have an equivalent hydraulic diameter less than or equal to about 0.064 centimeter.

4,475,912
ADJUSTABLE DIAPERS WITH FASTENING MEANS

Fredrica V. Coates, 1608 Dublin Rd., Charlottesville, Va. 22903

Filed Oct. 26, 1981, Ser. No. 315,049
Int. Cl.³ A61F 13/16
U.S. Cl. 604—385 13 Claims

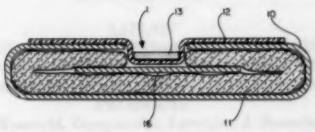


1. A diaper, comprising:
(a) absorbent material having opposite inner and outer surfaces, said inner surface adapted to face a wearer to be diapered;
(b) attachment means secured to an upper portion of the fabric;
(c) first fastening means secured to the outer surface of the fabric adjacent a lower edge portion thereof, said first fastening means extending longitudinally from the lower edge portion for engagement with the attachment means to secure the diaper to a wearer;
(d) second fastening means secured to the outer surface of the fabric and spaced inwardly from the first fastening means, said second fastening means engageable with the attachment means to shorten diaper length and thereby accommodate growth of the wearer;
(e) a pair of side panels integrally formed by overlapping side portions of the fabric into a folded position on said outer surface; and
(f) panel attachment means for fastening the side panels to an intermediate portion of the inner surface to insulate said panel attachment means from the wearer; wherein said attachment means includes a pair of attachment tabs and said fastening means includes a plurality of elongated fastening strips, each strip having an inwardly directed edge defining a transverse fold region to allow a lower edge portion of said diaper fabric to be folded along the fold region on the fabric inner surface prior to folding the side panels, thereby shortening the length of the diaper fabric to accommodate newborn infants and prevent contact between the infant and the first fastening means.

4,475,913
SANITARY NAPKIN WITH SOFT EDGES

James J. Hlaban, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 6, 1982, Ser. No. 395,236
Int. Cl.³ A61F 13/16
U.S. Cl. 604—387 8 Claims

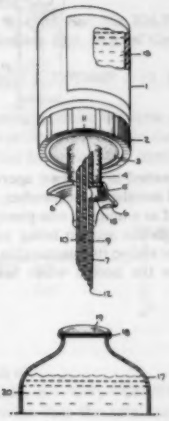


1. A sanitary napkin comprising an absorbent batt, a fluid pervious cover coterminous with said batt, said batt folded over along its longitudinal sides to provide a double thickness at the bottom of each side portion; said double thickness portions spaced from each other defining a centrally located cavity, a fluid impervious baffle extending at least over said cavity and conforming thereto and said bottom side portions; and in intimate contact therewith and a pressure sensitive adhesive pattern positioned within said cavity.

4,475,914
MEDICAMENT CONTAINER AND TRANSFER DEVICE

Joel B. Portnoff, Richboro, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 30, 1982, Ser. No. 412,749
Int. Cl.³ A61J 1/08; B67B 7/24
U.S. Cl. 604—414 1 Claim



1. In combination, a medicament container for relatively insoluble medicament and a transfer spike having one end enclosed in and connected with a bellows type sleeve to said medicament container, said container having its open end sealed from contact with the atmosphere by a flexible puncturable diaphragm integrally joined to said bellows sleeve, said transfer spike having at least two conduits extending longitudinally from end to end, one of said conduits being provided with a vent tube terminating in a sterile hydrophobic filter, and being provided with flange type finger grip means located intermediate the ends of said spike, the enclosed end of said spike being positioned within said bellows to allow puncture of said diaphragm with said enclosed end spike by compression of said bellows.

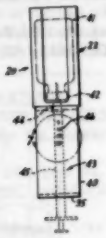
4,475,915
HOLDER FOR A SYRINGE AND AN AMPOULE

Glenn L. Sloane, 8825 Colbath, Panorama City, Calif. 91402

Continuation of Ser. No. 376,009, May 7, 1982, abandoned. This application Oct. 13, 1983, Ser. No. 541,485
Int. Cl.³ B65B 3/32
U.S. Cl. 604—414 12 Claims

1. A holder for a syringe and an ampoule of the type having a central puncturable portion, to facilitate the transfer of liquid from the ampoule to the syringe, comprising:
a body having a trough-like section slidably to receive and support said ampoule, a wall member on said body adjacent to said trough-like section, there being an aperture through said wall member to receive and support a portion of said syringe, with its needle projecting into said trough-like section in alignment with said puncturable portion, whereby to puncture said puncturable portion when said ampoule is slid so its puncturable portion moves toward and upon said needle; a rest member spaced from said wall member, said rest member having an aperture to

receive and support said syringe so as to limit its travel toward said trough-like section, at least a portion of the boundary of each of said apertures serving to align said syringe so that its needle is directed accurately toward said puncturable portion; and an optical magnifier between said rest member and said wall member, so disposed and arranged as to magnify the volume markings on a



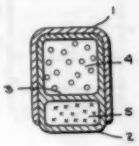
syringe supported in said two apertures, said trough-like section, wall member, rest member, and optical magnifier being formed as a unitary, one-piece said body, the length of said trough-like section being sufficient to enable the ampoule to be slid so its puncturable portion fully clears or fully engages the needle while being supported in said section.

4,475,916

OSMOTIC DRUG DELIVERY SYSTEM

Kenneth J. Himmelstein, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 18, 1982, Ser. No. 359,324
Int. Cl.³ A61M 31/00
U.S. Cl. 604—890 11 Claims



1. An osmotic delivery system shaped and sized for oral ingestion, implantation, rectal, vaginal or ocular insertion, for delivery of a drug or other beneficial substance comprising a compartment consisting of at least one chamber, said chamber being adapted to house osmotically active agents, adsorption adjuvants, drugs, and pro-drugs, said chamber being formed by an external shell of a rigid microporous material; and at least one overlayer of a semipermeable membrane substantially covering the external shell of said chamber leaving exposed a microporous drug-emitting surface.

4,475,917

PROCESS FOR MODIFYING REGENERATED CELLULOSE FIBER

Takeo Ohshima, Moriyama, and Shigeki Ohtani, Ibaraki, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 20, 1982, Ser. No. 420,753

Claims priority, application Japan, Sep. 24, 1981, 56-149349; Sep. 28, 1981, 56-152002; Feb. 2, 1982, 57-14389

Int. Cl.³ D06M *1/02*

U.S. Cl. 8—127 14 Claims

1. A process for producing a regenerated cellulose fiber having a good hand and a good shrink resistance comprising applying a liquid not readily soluble in liquid ammonia and adsorbable on regenerated cellulose fiber to the surface of regenerated cellulose fiber or attaching a polymer to the surface of regenerated cellulose fiber in the form of a film, adjusting the moisture content of said regenerated cellulose fiber to 5% or more based on the absolute dry weight of said fiber, thereafter contacting said regenerated cellulose fiber with liquid ammonia, and subsequently removing the ammonia from the regenerated cellulose fiber.

4,475,918

COMPOSITION AND METHOD FOR IMPROVING THE FASTNESS OF ANIONIC DYES AND BRIGHTENERS ON CELLULOSIC AND POLYAMIDE FIBERS

Bruno Kissling, Hagendorf, and Tibor Robinson, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 24, 1983, Ser. No. 526,002

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1982, 3232195

Int. Cl.³ C08L *61/32*

U.S. Cl. 8—495 24 Claims

1. A process for improving the fastness properties of an anionic dyestuff or optical brightener on a substrate comprising hydroxy group-containing fibres or natural or synthetic polyamide fibres which comprises applying, sequentially or simultaneously, to such a substrate dyed, printed or brightened with such a dyestuff or optical brightener

(A) a polybasic compound which is the product of reacting a mono- or polyfunctional primary or secondary amine with cyanamide, dicyandiamide, guanidine or biguanidine or with a mixture of at least 50 mole % of the cyanamide, dicyandiamide, guanidine or biguanidine and a dicarboxylic acid or a mono- or di-ester thereof, said product (A) containing reactive hydrogen atoms bound to nitrogen, and

(B) a precondensate formed by reacting a compound of type (A) above with

(C) an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide,

said precondensate (B) being applied to the substrate together with

(D) a catalyst for the crosslinking of N-methylol compounds of the type (C) above,

and heat-curing the thus-treated substrate.

4,475,919

COLORED MEDICINAL TABLET, NATURAL COLOR PIGMENT AND METHOD FOR USING THE PIGMENT IN COLORING FOOD, DRUG AND COSMETIC PRODUCTS

Edward J. Woznicki, Douglasville; Lawrence J. Rosania, North Wales, and Keith Marshall, Ft. Washington, all of Pa., assignors to Colorcon, Inc., West Point, Pa.

Division of Ser. No. 144,617, Apr. 28, 1980, Pat. No. 4,336,244, which is a continuation of Ser. No. 837,301, Sep. 27, 1977, Pat. No. 4,274,830. This application Jan. 6, 1982, Ser. No. 337,379

Int. Cl.³ D06P *3/60*

U.S. Cl. 8—518 19 Claims

1. A method of making an edible natural dye pigment for coloring food, drug and cosmetic products comprising:

suspending a natural water insoluble edible powdered substrate in an aqueous liquid,

dyeing the suspended powder with an edible natural dye and a dyeing aid or fixing agent, and

removing the liquid to obtain the dyed powder as a dry powder.

4,475,920

METHOD FOR OBTAINING IMPROVED DYEINGS ON POLYAMIDE

Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

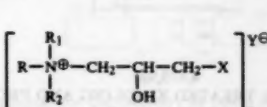
Filed Jan. 4, 1982, Ser. No. 336,783

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1981, 3100559

Int. Cl.³ D06M *3/30*; D06P *1/39, 1/66*

U.S. Cl. 8—542 33 Claims

1. A process for treating a textile substrate consisting of or comprising natural or synthetic polyamide comprising applying to the substrate, either before or after dyeing, a compound of formula I,



I

in which

R is an C_{8-20}alkyl, each of

R_1 and R_2, independently, is $-CH_2-CHOHCH_2-X$ or C_{1-4}alkyl, with the proviso that the total number of carbon atoms in $R+R_1+R_2$ is from 8 to 26,

X is chlorine or bromine,

Y is a non-chromophoric anion, and

n is a whole number from 1 to 3,

with the proviso that the application of a compound of formula I before dyeing is effected from a neutral to alkaline medium.

4,475,921

ACOUSTIC AGGLOMERATION METHODS AND APPARATUS

Martin B. Barmatz, Glendale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 24, 1982, Ser. No. 361,217

Int. Cl.³ C05B *19/00*

U.S. Cl. 23—313 R 4 Claims

1. A method for agglomerating particles suspended in a gas, comprising:

flowing said gas into a chamber; and

simultaneously applying first and second acoustic energy of the same frequency, largely along perpendicular directions in said chamber, with each of said first and second energies being at resonant chamber modes and with said first and second energies being out of phase, to cause small particles to move in circle-like paths.

4,475,922

METHOD OF TREATING COAL FOR INCREASING THE AVAILABILITY OF COAL-FIRED BOILERS

Stanley R. Rich, Wellesley Hills, Mass., assignor to Advanced Energy Dynamics, Natick, Mass.

Continuation of Ser. No. 175,773, Aug. 6, 1980, abandoned. This application Jun. 3, 1982, Ser. No. 384,622

Int. Cl.³ C10L 9/00; F23D 1/00

U.S. Cl. 44—1 C 6 Claims

4. Method of crushing and treating coal for improving combustion in a coal-fired boiler employing pulverized bituminous feed coal comprising the steps of crushing the coal to a range of particle sizes from 1 to 250 microns, selectively physically separating from the feed coal a substantial proportion of those particles of inorganic material larger than 37 to 74 microns in size which during combustion do not readily follow the gas stream in the boiler but tend to move in straight-line paths and impinge and deposit upon heat-exchanger surfaces so as to form ash deposits on the heat-exchanger surfaces of the boiler, and excluding said particles from the feed coal prior to combustion.

4,475,923

CHEMICALLY TREATED KINDLING AND PROCESS

Roscoe T. Earlywine, 3100 Field Dr., Kokomo, Ind. 46902

Filed Jan. 27, 1983, Ser. No. 461,445

Int. Cl.³ C10L 11/00, 11/04

U.S. Cl. 44—41 13 Claims

9. A chemically treated kindling, comprising:

a combustible material saturated with a prepared composition,

said prepared composition comprising a first composition comprising about 99% refined petroleum wax, about 1% refined oil, and not more than 15 parts per million of dibutylparacresol as an antioxidant; a second composition comprising about 87% refined petroleum wax and about 13% refined oil; a third composition comprising about 80% refined petroleum wax and about 20% refined oil; a fourth composition comprising about 75% refined petroleum wax and about 25% refined oil; a fifth composition comprising about 70% refined petroleum wax and about 30% refined oil; a sixth composition comprising about 95% refined petroleum wax and about 5% refined oil; a seventh composition comprising about 99% refined petroleum wax and about 1% refined oil; and an eighth composition comprising about 72% refined petroleum wax and about 28% refined oil.

4,475,924

COAL DERIVED FUEL COMPOSITION AND METHOD OF MANUFACTURE

Edmond G. Meyer, Laramie, Wyo., assignor to Meyer Trust, Laramie, Wyo.

Continuation-in-part of Ser. No. 247,382, Mar. 24, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,937

Int. Cl.³ C10L 1/32

U.S. Cl. 44—51 11 Claims

1. A fuel composition comprising a liquid-solid admixture including a portion of a particulate coal char material derived from coal dispersed in an amount of liquid organic material effective to produce a fluidic, combustible, transportable composition wherein said liquid organic fraction is at least partially derived from the pyrolytic destructive distillation of coal; or, is a lower chain alcohol of from 1 to about 4 carbon atoms, or mixtures thereof.

4,475,925

GASIFICATION PROCESS FOR CARBONACEOUS MATERIALS

C. Richard Hsieh, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 20, 1982, Ser. No. 450,936

Int. Cl.³ C10J 3/54

U.S. Cl. 48—197 R 3 Claims

1. A method for the gasification of a carbonaceous material comprising:

(a) introducing a solid sintered bauxite into an upper portion of a vertically elongated reaction vessel, the vessel having a means for substantially impeding vertical backmixing of vertically moving solids in the vessel;

(b) introducing a carbonaceous material mixed with potassium nitrate into a lower portion of said vessel, the physical characteristics of the sintered bauxite and the carbonaceous material differing such that a superficial velocity of a fluid flowing upwardly through the vessel is greater than the minimum fluidizing velocity of the sintered bauxite and the terminal velocity of the carbonaceous material, but is less than the terminal velocity of the sintered bauxite;

(c) passing steam upwardly through said vessel at a rate sufficient to fluidize the sintered bauxite and entrain the carbonaceous material to maintain substantially countercurrent vertical flow of the sintered bauxite and carbonaceous material in the vessel without substantial top-to-bottom backmixing of the sintered bauxite and the carbonaceous material in the vessel, whereby the sintered bauxite substantially flows downwardly in a fluidized state through the vessel and the carbonaceous material substantially flows upwardly in an entrained state through the vessel, whereby the steam reacts with the carbonaceous material to form a hot char and a gaseous product, wherein the heat necessary for said reaction is supplied by the sintered bauxite;

(d) removing the sintered bauxite from a lower end of said vessel at a temperature substantially lower than the temperature at which the sintered bauxite was introduced into the vessel.

4,475,926

ACTIVE FILLER FOR GRINDING WHEELS

Gordon E. Hickory, Upton, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 352,290, Feb. 25, 1982, abandoned. This application Sep. 2, 1983, Ser. No. 529,076

Int. Cl.³ C09K 3/14

U.S. Cl. 51—298 6 Claims

1. An organic polymer bonded abrasive product comprising abrasive grain, an organic polymer for said abrasive grain, and active fillers which together with the organic polymer comprise a bond, wherein the improvement comprises an active filler which is a mixture of iron pyrites, potassium sulfate, and an alkali metal haloferrate having the formula:

$$A_xFe_y + + Fe_z + + + H_{x+2Y+3z}$$

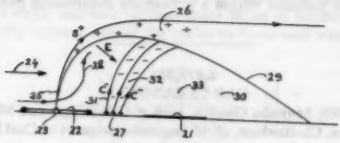
in which A is an alkali metal ion or ammonium ion, H is a halide ion, x is a number from 1 to 10, y is a number from 0 to 1, z is a number from 0 to 1, and y and z cannot be 0 at the same time, the fillers are present in said bond in a ratio of alkali haloferrate-to-pyrites-to-potassium sulfate of 0.5:1:0.5, and said fillers are present in said bond in a total amount of from 5 to 80% by volume.

4,475,927

BIPOLAR FOG ABATEMENT SYSTEM

Hendricus G. Loos, 3019 Cresta Way, Laguna Beach, Calif. 92651

Filed Mar. 3, 1981, Ser. No. 239,893
Int. Cl.³ B03C 1/00
U.S. Cl. 55—10 16 Claims



1. A method for abatement of fog in a predetermined spatial region, subject to wind, comprising:

distributing a set of nozzles which are aimed in a substantially upward direction in such a manner that said nozzles are spaced apart from each other and occupy at least an area on one side of the clearing volume, the latter being the predetermined spatial region subject to wind, and bordering on the ground, which is to be cleared of fog;

emitting, for each nozzle of said set of nozzles, an airjet laden with electrically charged droplets with a predominant polarity and a low mobility, said low mobility being sufficiently small that the charged droplets are essentially not driven out of the said airjet by electric repulsion up to the height of the upper boundary of said clearing volume, and such that said charged droplets, blown aloft by each said airjet of the said set of nozzles and moved downstream by said wind, collectively forms a virtual electrode which is substantially suspended above the said clearing volume;

dispensing electrically charged drops of high mobility, called collector drops, with a polarity opposite to said predominant polarity, in locations spaced apart from each other in an area at least on one side of said clearing volume, but placed away from the said set of nozzles;

moving said collector drops along trajectories which are directed substantially upward toward said virtual electrode by action of the collective electric field set up by the said virtual electrode, the electric charges in each said airjet, the electric charges on said collector drops, and the polarization charges on said ground which come about in response to the charges introduced;

causing the said collector drops, moving along their said trajectories in a substantially upward motion, to collide with neutral fog drops in their paths, thereby causing coalescence of said collector drops and fog drops, resulting in disappearance of fog drops and enlargement of said collector drops;

eventually causing both the original collector drops and the collector drops which have been enlarged by said coalescence with fog drops to move towards the upper boundary of the said clearing volume, by action of said collective electric field on the electric charge of the collector drops; and

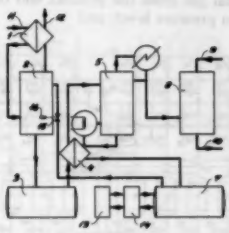
causing substantial clearing of the said clearing volume by removal of most of the fog drops blown in by said wind, by the mechanism of said coalescence of last said fog drops with collector drops, said high mobility being sufficiently large to cause said trajectories to be steep enough to remain essentially outside of the said clearing volume.

4,475,928

METHOD FOR THE RECOVERY OF PETROL (GASOLINE) FROM A MIXTURE OF PETROL VAPOR AND AIR, AND A SYSTEM FOR USE IN THE METHOD

Anker J. Jacobsen, Bjergbakkevej 45, DK-2600 Glostrup, Denmark

PCT No. PCT/DK82/00048, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983, PCT Pub. No. WO82/04260, PCT Pub. Date Dec. 9, 1982
PCT Filed May 25, 1982, Ser. No. 463,878
Claims priority, application Denmark, May 25, 1981, 2275/81
Int. Cl.³ B01D 53/14
U.S. Cl. 55—20 14 Claims



1. A method for the recovery of petrol from a mixture of petrol vapour and air, in which the petrol vapour is absorbed in an absorption means by direct contact with a cooled petroleum distillate supplied from a storage tank, and then the petrol dissolved in the petroleum distillate is stripped so that the petroleum distillate circulates in a substantially closed circuit, characterized in that the absorbing medium is a petroleum distillate having a higher boiling point range than petrol, and that the petroleum distillate in sequence is at least: (1) cooled by heat exchange with a cold reservoir, (2) brought into direct contact with the petrol/air mixture to absorb petrol, (3) transferred to a buffer tank and (4) transferred from the buffer tank to a stripping means, the amount of cooled petroleum distillate caused to contact the petrol/air mixture being controlled so that the concentration of petrol in the petroleum distillate transferred to the buffer tank is substantially constant.

10. A system for the recovery of petrol from a mixture of petrol vapour and air, comprising an absorption means to absorb petrol from a received petrol/air mixture by means of a cooled petroleum distillate, said absorption means being connected to a stripping means to strip petrol dissolved in the petroleum distillate and a storage tank for petroleum distillate, respectively, characterized in that a buffer tank (3) is mounted between the absorption means (2) and the stripping means (5), and that flow regulating means (15, 16), which are dependent upon the temperature in a mixing zone in the absorption means (2), are interposed between the storage tank (7) and the absorption means (2).

4,475,929

SELECTIVE ADSORPTION PROCESS

Andrija Fuderer, Antwerp, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.

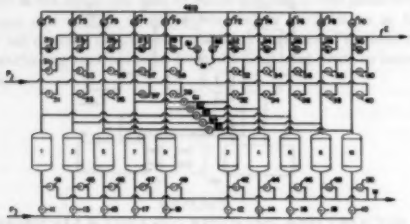
Continuation-in-part of Ser. No. 966,586, Dec. 5, 1978, Pat. No. 4,375,363. This application Jan. 14, 1983, Ser. No. 457,916
Int. Cl.³ B01D 53/04
U.S. Cl. 55—25 5 Claims

1. In a pressure swing adsorption process for the selective adsorption of at least one component of a hydrogen-containing feed gas mixture comprising the product gas of a steam reformer unit so as to produce a purified hydrogen product gas in an adsorption system having at least three adsorbent beds, each of which undergoes, on a cyclic basis, higher pressure adsorption with recovery of hydrogen product from the product end of the bed, cocurrent depressurization to intermediate

pressure(s) with release of void space gas from the product end of the bed, countercurrent depressurization to a lower desorption pressure and/or purge with release of gas from the feed end of the bed, and repressurization to said higher adsorption pressure, the improvement comprising:

(a) introducing natural gas to the feed end of the bed at said adsorption pressure level as a cocurrent purge gas upon completion of the adsorption step at said adsorption pressure and prior to commencing said cocurrent depressurization, said natural gas being added in a sufficient amount so as to establish a purge gas front in said bed, thereby displacing hydrogen present as void space gas from the feed end of the bed;

(b) withdrawing additional hydrogen product displaced by said natural gas from the product end of the bed at said adsorption pressure level; and



(c) passing the hydrogen-depleted, natural gas-containing waste gas released from the feed end of the bed upon countercurrent depressurization and/or purge to said steam reformer unit for use as fuel for the burners supplying the heat requirements of said steam reformer unit, the natural gas content of said waste gas comprising complementary fuel for said steam reformer unit, whereby the recovery of the hydrogen product gas is enhanced and the loss of hydrogen in the countercurrent depressurization and/or purge effluent is correspondingly diminished, with the natural gas employed to achieve such enhanced hydrogen recovery also serving as the complementary natural gas fuel used to supply the heat requirements of said steam reformer unit.

4,475,930

PRESSURE SWING ADSORPTION SYSTEM USING PRODUCT GAS AS REPLACEMENT FOR PURGE GAS

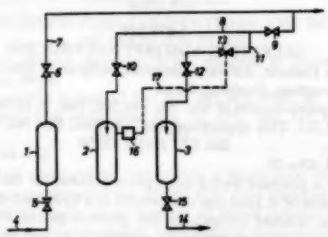
Stefan Asztalos, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 467,060

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205451

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 **6 Claims**



1. In a pressure swing adsorption process utilizing a plurality of interconnected adsorbers, comprising the steps within one cycle of adsorption, expansion or pressure equalization, purging, and pressure buildup, wherein purified product gas is withdrawn during the adsorption step; purge gas for the purging step comprises residual gas released during the expansion of at least one adsorber; the pressure buildup step is conducted at least in part by blowing in product gas, and wherein there is a malfunction in the at least one adsorber yielding the purge gas so that insufficient purge gas is available, the improvement comprising employing the product gas for the pressure buildup and for purging one or several other adsorbers; and adjusting the amount of product gas used as purge gas so that the adsorbers, which are in the pressure buildup step, reach the desired adsorption pressure within a previously determined period of time.

4,475,931

GAS CLEANING

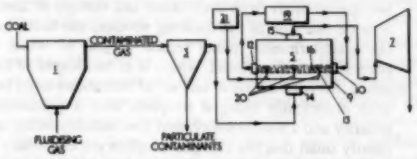
Roland Clift; Mojtaba Ghadiri, both of Cambridge, and Michael J. Cooke, Cheltenham, all of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 010,403, Feb. 8, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,339

Claims priority, application United Kingdom, Feb. 17, 1978, 06385/78

Int. Cl.³ B01D *53/12*

U.S. Cl. 55—77 **4 Claims**



1. A method of producing a substantially contaminant-free product gas from a gas contaminated with particulate material comprising

(a) passing the contaminated gas through a cyclone separator,

(b) feeding the exhaust gas from the cyclone separator to a collection medium comprising a fluidised particle bed,

(c) feeding a fuel oil into the collection medium,

(d) maintaining the collection medium at a temperature from 700° to 1200° C. so that the fuel oil is cracked and deposits a tarry liquid on the bed particles, thereby rendering them sticky so that the contaminant particles adhere to the bed particles, and

(e) withdrawing a product gas from the collection medium.

4,475,932

GAS-LIQUID VORTEX SEPARATOR-ELIMINATOR

Robert Hull, Warwick, R.I., and Joseph A. Lane, Taunton, Mass., assignors to Amtrol Inc., West Warwick, R.I.

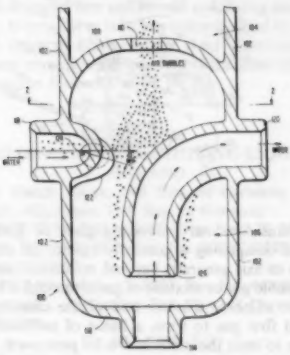
Filed Jan. 21, 1983, Ser. No. 460,056

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—170 **10 Claims**

1. A gas-liquid vortex separator-eliminator which is adapted to be connected in a closed liquid circulating system having supply and return lines including a circulating pump connected therein for circulating liquid in said circulating system, comprising (a) an upright main body which has an upper chamber (b) and a lower chamber (c), said upper chamber (b) and lower chamber (c) being separated by a horizontal wall (d) that has a gas discharge port (e) in the center thereof, (f) an inlet which has a horizontal axis which generally perpendicularly intersects the vertical axis of said upright main body (a), said inlet (f) having an integral diffuser (g) positioned immediately inside of said lower chamber (c), said integral diffuser (g) being affixed at a horizontal angle and at a vertical angle to said hori-

zontal axis of said inlet (f), (h) an outlet, which has a horizontal axis which is generally aligned on said horizontal axis of said inlet (d) and which generally perpendicularly intersects said vertical axis of said upright main body (a), said outlet (h) having a vertical pipe leg (i) positioned inside of said lower chamber (c) so that the lower segment thereof is positioned in the lower portion of lower chamber (c) and that the vertical axis of said lower segment of said vertical pipe leg (i) is generally aligned in said vertical axis of said upright main body (a), and (j) a gas vent-eliminator positioned within said upper chamber (b), when said separator-eliminator is in operation, said liquid enters said inlet (f), is directed into said lower chamber (c) and exits via said vertical pipe leg (i) and said outlet (h), said horizontal angle and said vertical angle being of sufficient degree from the vertical axis of the outlet to force said water tangen-



tially against the side of said lower chamber (c) and downwardly in said lower chamber (c), respectively, so as to form a water vortex in said lower chamber whereby the gas in said liquid is released in the form of bubbles, said liquid being present during operation in said upper chamber (b) and said lower chamber (c), the lower end of said vertical pipe leg (i) being below where said bubbles form and/or where gas bubbles entrained in said liquid are carried down to by said vortex, said horizontal separating wall (d) being positioned in said upright main body (a) at a level to prevent the tangential fluid motion in said lower chamber (c) from interfering with the passage of gas bubbles up into said upper chamber (b), the gas bubbles rising into said upper chamber (b) and being purged into the atmosphere by means of said gas vent-eliminator within said upper chamber (b).

4,475,933

FILTER DEVICE FOR REMOVING PARTICULATE MATERIAL FROM GASES

Peter R. Piggin, Burton Overy, England, assignor to Air Pollution (Equipment) Limited, Leicester, England

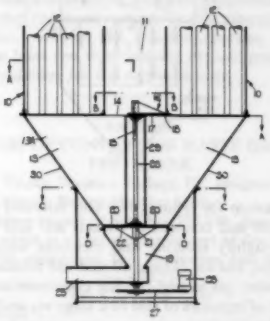
Continuation of Ser. No. 247,556, Mar. 25, 1981, abandoned. This application Aug. 18, 1982, Ser. No. 409,065

Claims priority, application United Kingdom, Feb. 13, 1981, 8104571

Int. Cl.³ B01D *46/04, 50/00*

U.S. Cl. 55—287 **7 Claims**

1. A filter device for removing particles from a particle-laden gas, said filter device comprising an inlet duct arranged to provide a downward flow therethrough of a particle-laden gas, a plurality of filter units distributed about said inlet duct, a plurality of vertical plates radiating outwardly from a central region which is vertically below the bottom of the inlet duct, said plates defining between them a ring of decelaration chambers which are wedge-shaped and have inner narrow sides and outer wider sides, the inner narrow sides of said deceleration chambers being vertically below the bottom of said inlet duct, said deceleration chambers having inlets which are at the tops of their inner sides and vertically below the bottom of said inlet duct and receive particle-laden gas from said inlet duct, each of said deceleration chambers having at the top of a wider part thereof a gas exit to at least one of said filter units and having at its bottom a removed particle exit, whereby particle-laded gas entering each deceleration chamber first moves towards said removed particle exit and then substantially reverses its flow direction to exit through said gas exit, leaving behind some large particles at the bottom of that deceleration chamber, a first baffle mounted to be turned about a substantially vertical axis so as to pass above and close to said inlets and close off said inlets successively and at least one at a time as said first baffle is turned, an outlet duct, suction means coupled



to said outlet duct, said outlet duct positioned and arranged to carry away particles removed from said deceleration chambers and said filter units via said removed particle exits by said suction means coupled to said outlet duct, a second baffle mounted to be turned about a substantially vertical axis and thereby provide communication of said removed particle exits at least one at a time to said outlet duct while the other removed particle exits are closed off from said outlet duct, and drive means for turning said first and second baffles in synchronism so that when the inlet of one deceleration chamber is closed off from said inlet duct the removed particle exit of the same deceleration chamber is in communication with said outlet duct.

4,475,934

PRESSURE-GAS CONNECTION FOR DUST-LADEN GAS FILTERS

Friedel Kordas, Recklinghausen, Fed. Rep. of Germany, assignor to Intensiv-Filter GmbH & Co. KG, Velbert, Fed. Rep. of Germany

Continuation of Ser. No. 166,734, Jul. 7, 1980, Pat. No. 4,367,080. This application May 6, 1982, Ser. No. 375,611

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005146

The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—302 **6 Claims**

1. In a filter apparatus comprising a housing having a gas inlet and a gas outlet and having therein a plurality of filter elements for cleaning gas flowing therethrough and a two-stage injector device for reverse-flow purging of the filter elements comprising a plurality of injectors of a first stage and a cooperating plurality of injectors of a second stage arranged to direct a cleaning gas into said filter elements, and a pressure gas connection to a conduit which feeds a pressure gas to the injectors of the first stage, wherein said conduit is a single continuous conduit,

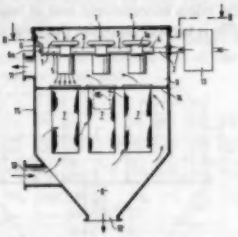
the improvement in the pressure gas connection wherein

said plurality of injectors of said first stage include connecting sockets, respectively,

spacer sleeves and said connecting sockets are disposed on said conduit in alternating arrangement, said pressure gas connection including said connecting sockets and spacer sleeves,

said conduit communicates with said plurality of injectors of said first stage via said connecting sockets,

said sleeves and said connecting sockets are members, one of said members is an end member disposed over a free end of said conduit,



clamping means for holding fast said injectors of said first stage with said connecting sockets and said sleeves, for pressure-tightly securing said members with respect to each other, and for closing off said end member such that the pressure gas in said conduit communicates with said plurality of injectors of said first stage via said connecting sockets.

4,475,935

JOINING METHOD TO OBTAIN ELONGATED COATED OPTICAL FIBER

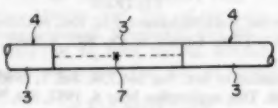
Chihaya Tanaka; Kazuo Iwabuchi, both of Ibaraki; Toshiaki Kakii, and Yuichi Toda, both of Kanagawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Jul. 22, 1982, Ser. No. 401,044

Claims priority, application Japan, Jul. 24, 1981, 56-116056

Int. Cl.³ C03B *37/12*

U.S. Cl. 65—3.41 **10 Claims**



1. A method for joining elongated optical fiber cables each of which including a glass fiber and a coating layer formed over said glass fiber, comprising the steps of:

preparing a first optical fiber cable by removing said coating layer from an end portion of the cable to provide a first bare glass fiber portion;

preparing a second optical fiber cable by removing said coating layer from an end portion of the cable to provide a second bare glass fiber portion;

splicing and melt-joining said first bare glass fiber portion and second bare glass fiber portion in order to form joined bare glass fiber portions; and

molding a material about the joined bare glass fiber portions in such a manner that the resultant molded portion has a diameter substantially equal to that of said coating layer, the material being chemically compatible with said coating layer.

4,475,936

APPARATUS FOR THE HEAT PROCESSING OF PARTICULATE MATERIALS

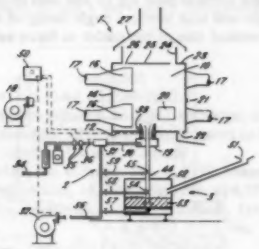
Geoffrey W. Aston, and Roderick M. Smart, both of Horsham, England, assignors to Redland Technology Limited, Surrey, England

Filed Feb. 10, 1983, Ser. No. 465,611

Claims priority, application United Kingdom, Feb. 12, 1982, 8204114

Int. Cl.³ C03B *19/10*

U.S. Cl. 65—142 **11 Claims**



1. Apparatus for heat processing glass or glass forming material and comprising a generally cylindrical chamber arranged with its axis generally vertical; means for introducing a first combustible gas or mixture of gases through a burner into the chamber adjacent a lower end of the chamber and for igniting said first gas to form a flame of sufficient size and temperature to melt the materials to be processed; means for introducing a current of a second gas or mixture of gases into said chamber generally tangentially of the chamber wall to cause said flame to swirl in the manner of a vortex and provide a quenching zone of gas surrounding said flame; an outlet for exhaust gases, and means for supplying the material into the chamber, in which a ring surrounds the burner and has nozzles for introducing a third gas or mixture of gases upwardly but at an angle to the axis of the burner thereby assisting said swirling motion.

4,475,937

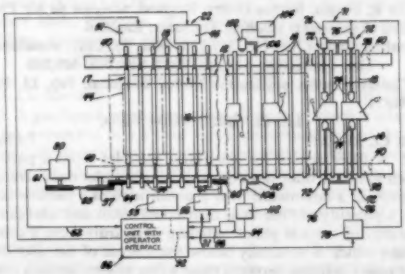
CONVEYOR CONTROLLER FOR GLASS SHEET PROCESSING EQUIPMENT

John S. Nitschke, Perrysburg, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Filed Sep. 1, 1982, Ser. No. 414,088

Int. Cl.³ C03B *35/00*

U.S. Cl. 65—163 **5 Claims**



1. In a control system which monitors and controls the processing of sheets of glass in a glass processing system wherein the sheets of glass are conveyed by a main conveyor

and an auxiliary conveyor driven by a separate, variable speed drive for conveying the sheets of glass between the main conveyor and the auxiliary conveyor, the control system including a master controller to provide a command signal and a positioning controller for controlling the variable speed drive, the positioning controller comprising:

first generating means coupled to the main conveyor for generating a first transport signal corresponding to the distance that the glass sheets are conveyed along the path of conveyance on the main conveyor;

a second generating means coupled to the auxiliary conveyor for generating a second transport signal corresponding to the distance that glass sheets are conveyed along the path of conveyance on the auxiliary conveyor;

a slave controller for processing the command signal from the master controller and the first and second transport signals from the first and second generating means, respectively, to provide at least one control signal to the variable speed drive to control glass sheet conveyance on the auxiliary conveyor independent of the glass sheet conveyance on the main conveyor.

4,475,938

CUTTING DEVICE FOR SECTIONING LIQUID GLASS STRAND

Werner D. Knoth, Essen, Fed. Rep. of Germany, assignor to Veba-Glas AG, Essen, Fed. Rep. of Germany

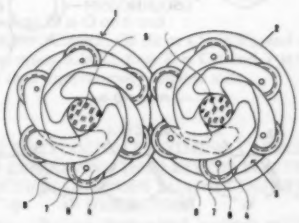
PCT No. PCT/EP82/00026, § 371 Date Nov. 29, 1982, § 102(e) Date Nov. 29, 1982, PCT Pub. No. WO82/03384, PCT Pub. Date Oct. 14, 1982

PCT Filed Feb. 12, 1982, Ser. No. 449,009

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113303

Int. Cl.³ C03B 7/12

U.S. Cl. 65—334 **10 Claims**



1. A cutting device for the sectioning of a liquid glass strand of circular peripheral curvature into individual gobs for processing into hollow glass articles, said cutting device comprising:

a housing having an opening traversed by said strand;

a plurality of partially overlapping elongated cutting elements disposed around said strand, each of said cutting elements being pivoted only at one end thereof in said housing and having a curvature turned toward said glass strand different from the circular curvature thereof, said cutting elements being uniformly spaced around said strand so that as they pivot about respective pivot axes at the respective said one end of each cutting element, said cutting elements slice through said strand completely and upon pivoting in an opposite sense are withdrawn completely from engagement with said strand;

a respective planetary gear rotatable about the pivot of each of said elements and coupled therewith at the respective said one end thereof for rotating the respective element;

a ring gear in said housing rotatable about said strand and meshing with all of said planetary gears; and

means for rotating said ring gear in said housing to swing all of said elements in one sense or an opposite sense simultaneously.

4,475,939

STABILIZED FERTILIZER SOLUTIONS

Horst Michaud, Trostberg; Hermann Raveling, Altenmarkt, and Josef Seeholzer, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,772

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147821

Int. Cl.³ C05C 9/00

U.S. Cl. 71—28 **11 Claims**

1. In a fertilizer solution including dicyandiamide as a nitrification inhibitor, the improvement, for retarding dicyandiamide crystallization, wherein the solution contains an effective amount of at least one water-soluble organic polymeric compound as a stabilizer for the dicyandiamide.

4,475,940

METHOD OF CONVERTING WASTE DROSS TO FERTILIZER

Harland H. Young, Western Springs, Ill., assignor to Michigan Standard Alloys, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 275,249, Jun. 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 133,624, Jan. 21, 1980, abandoned. This application Jan. 18, 1983, Ser. No. 458,774

Int. Cl.³ C05B 7/00

U.S. Cl. 71—34 **10 Claims**

1. A method of converting powdered dross waste of the type produced in resmelting scrap aluminum metal into a dustless granulated fertilizer product, said dross containing less than about 2 wt.% each of calcium and silicon and at least 2 wt.% nitrogen as ammonia which comprises mixing the powdered dross with phosphoric acid that is at least about 65% concentrated to provide a chemical reaction and to fix the nitrogen present in the dross and agitating the mixture during the reaction to provide said granulated fertilizer product.

4,475,941

BIOCIDE COMPOSITION COMPRISING SULFONIUM COMPOUNDS AND ORGANIC TIN COMPOUNDS

Daniel Ayglon, Jurancon, and Marie C. Hardy, Ortez, both of France, assignors to Societe Nationale Elf Aquitaine, France

Filed Apr. 22, 1982, Ser. No. 370,968

Claims priority, application France, Apr. 27, 1981, 81 08350

Int. Cl.³ A01N 55/04

U.S. Cl. 71—67 **16 Claims**

1. A process of controlling the growth of the bacteria Enterobacteriaceae, Pseudomonaceae, Bacteriaceae, Clostridiales, Bacillales, or Sporovibrinoales, and the algae Diatomees, Cyanophycees or Chlorophycees, in aqueous medium which comprises introducing into the medium a biocidal effective amount of a synergistic mixture of 20 to 43 weight percent organic tin compound selected from the group consisting of tributyl tin oxide and tributyl tin benzoate and 80 to 57 percent by weight of tetradecyl dimethyl sulfonium methosulfate.

4,475,942

N-PHOSPHONOMETHYLGLYCINE DERIVATIVES AND HERBICIDAL COMPOSITIONS CONTAINING THEM

Izhak Bakel, Ramat Gan, Israel, assignor to Geshuri Laboratories Ltd., Tel-Mond, Israel

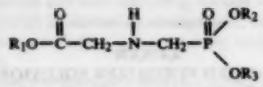
Filed Aug. 27, 1982, Ser. No. 412,196

Claims priority, application Israel, Aug. 8, 1982, 66494

Int. Cl.³ A01N 57/18; C07F 9/30

U.S. Cl. 71—86 **20 Claims**

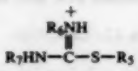
1. N-Phosphonomethylglycine derivatives of the general formula I



I

wherein

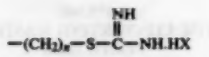
(a) R_1 and R_2 are hydrogen and R_3 is a salt forming cation of the general formula II



II

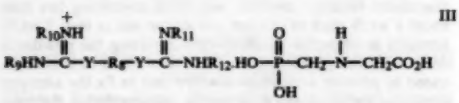
or R_2 is H and R_1 and R_3 are each a salt forming cation of the above formula II,

wherein R_5 is alkyl, allyl, vinyl, benzyl, furfuryl or a group of the formula



wherein n is 1–5 and X is halogen and R_6 and R_7 are independently H, alkyl, allyl or phenyl provided that only one of R_6 or R_7 may be alkyl, allyl, or phenyl, or R_6 and R_7 form together a group of the formula $—CH_2CH_2—$; or R_7 is hydrogen and R_5 and R_6 together form a group of the formula $—CH=CH—$ or $—CH_2CH_2—$; or

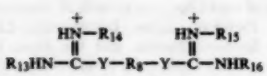
(b) R_1 and R_2 are H and R_3 is a salt forming cation of the general formula III



III

wherein Y is S or N, R_8 is a straight or branched chain alkylene radical having 1–12 carbon atoms and R_9, R_{10}, R_{11} and R_{12} are each independently H, alkyl, phenyl or allyl provided that only one of R_9 and R_{10} may be alkyl, allyl or phenyl and only one of R_{11} and R_{12} may be alkyl, allyl or phenyl, or Y is S and R_9 and R_{10} as well as R_{11} and R_{12} each together form a radical of the formula $—CH_2CH_2—$; or

(c) R_2 is H and R_1 and R_3 together form a salt forming cation of general formula IV



IV

wherein R_8 and Y are as defined and R_{13}, R_{14}, R_{15} and R_{16} are each independently H, alkyl, phenyl or allyl provided that only one of R_{13} and R_{14} may be alkyl, allyl or phenyl and only one of R_{15} and R_{16} may be alkyl, allyl or phenyl.

4,475,943

HERBICIDAL α-HYDROXY PHOSPHONATES

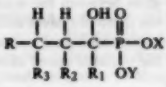
Van R. Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 279,371, Jul. 1, 1983, Pat. No. 4,413,125. This application Sep. 1, 1983, Ser. No. 528,700

Int. Cl.³ A01N *57/20, 57/22*

U.S. Cl. 71—86 **20 Claims**

1. A herbicidal composition comprising α-hydroxy phosphonate compound of the formula



(I)

wherein X and Y are each independently selected from the group consisting of a lower alkyl and benzyl; R_1, R_2, and R_3 are each independently selected from the group consisting of hydrogen and lower alkyl; R is a —Z—R_4 group wherein Z is oxygen or sulfur, and R_4 is lower alkyl, lower alkanol, aryl or R is piperidinyl or,

wherein —Z′ is nitrogen, and R_5 is lower alkyl, or lower alkoxyalkyloweralkyl, and R_6 is lower alkyl or hydrogen together with an inert diluent.

4,475,944

HERBICIDAL SULFAMATES

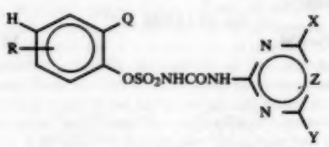
Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 386,680, Jun. 9, 1982, abandoned. This application Mar. 15, 1983, Ser. No. 473,322

Int. Cl.³ C07D *417/12, 413/12, 403/12;* **A01N** *43/54*

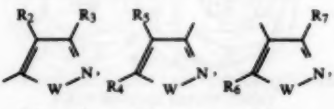
U.S. Cl. 71—90 **46 Claims**

1. A compound of the formula:

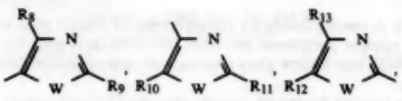


I

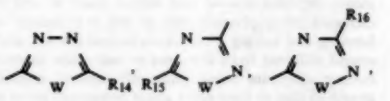
where Q is



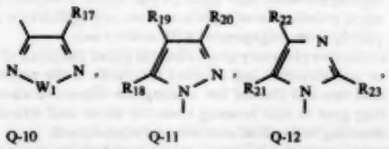
Q-1 Q-2 Q-3



Q-4 Q-5 Q-6

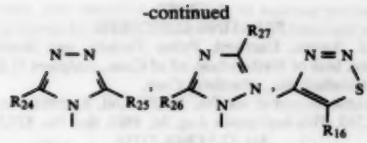


Q-7 Q-8 Q-9



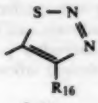
Q-10 Q-11 Q-12

-continued



Q-13 Q-14 Q-15

or



Q-16

R is H, F, Cl, Br, CH_3, CF_3 or OCH_3;
W is O, S or NR_1;
W_1 is O or S;
R_1 is C_1–C_3 alkyl;
R_2, R_3, R_4, R_5, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, R_{15}, R_{16}, R_{19}, R_{21}, R_{22}, R_{23}, R_{25} or R_{27} are independently H, CH_3 or C_2H_5;
R_6, R_7, R_{17}, R_{24} or R_{26} are independently H or CH_3;
R_{18} or R_{20} are independently H or C_1–C_3 alkyl;
X is Cl, CH_3, OCH_3, OCF_2H or SCF_2H;
Y is CH_3, C_2H_5, OCH_3, OC_2H_5, OCH_2CF_3, CH_2OCH_3, $CH(OCH_3)_2$

or GCF_2T where G is O or S and
T is H, CHClF, $CHBrF$, CF_2H or $CHFCF_3$; and Z is CH; provided that when X is Cl, then Z is CH and Y is OCH_3 or OC_2H_5; and their agriculturally suitable salts.

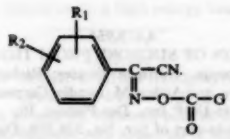
4,475,945

AMINOGLYOXYLOITRILE OXIMINO CARBOXYLIC ACID ESTERS AND THIO ESTERS FOR THE PROTECTION OF CROPS AGAINST INJURY BY HERBICIDES

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 112,049, Jan. 14, 1980, Pat. No. 4,416,686, which is a continuation of Ser. No. 938,205, Aug. 3, 1978, abandoned. This application Sep. 28, 1982, Ser. No. 425,782
Int. Cl.³ A01N 25/32; C07C 121/80
U.S. Cl. 71—105 **5 Claims**

1. A compound of the formula



wherein
R_1 is hydrogen or halogen,
R_2 is hydrogen, halogen, lower alkyl or trifluoromethyl and
G is lower alkoxy, lower alkylthio, lower alkoxyalkoxy, lower haloalkoxy or phenoxy optionally substituted by halogen, methoxy or nitro.

4. A method for protecting cultivated plants from being damaged by harmful agricultural chemicals selected from the group consisting of triazines, haloacetanilides and pyridyloxyphenoxypropionates, which method comprises applying to said plants, to parts thereof or to the locus of their growth, an antidotally effective amount of a compound according to claim 1.

4,475,946

FERROMAGNETIC METAL PARTICLES OF IRON ALLOYED WITH TI, V, CR, MN, CO, NI, CU, ZN, SI, P, MO, SN, SB AND AG COATED WITH MONO- OR DIALKOXYSILANES

Akihiro Matsufuji; Shizuo Umemura; Masashi Aonuma; Hajime Miyatsuka, and Tatsuji Kitamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 8, 1983, Ser. No. 530,436
Claims priority, application Japan, Sep. 8, 1982, 57-156405
Int. Cl.³ C22B 5/12; C22C 1/04
U.S. Cl. 75—0.5 AA **7 Claims**

1. Ferromagnetic metal particles having on the surface thereof a silane compound represented by the general formula:

$$R_x—Si—(OR')_{4-x}$$

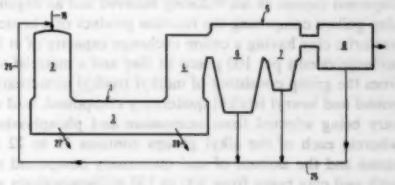
wherein R and R' each represent an alkyl group, and n represents 2 or 3.

4,475,947

METHOD FOR RECOVERING HEAT FROM DUST-BEARING GASES PRODUCED IN SMELTING SULPHIDE CONCENTRATES AND MEANS HEREFOR

Bengt T. Andersson, Espoo, Finland, assignor to Outokumpu Oy, Helsinki, Finland

Filed Oct. 12, 1983, Ser. No. 541,347
Int. Cl.³ C22B 5/02
U.S. Cl. 75—92 **7 Claims**



1. A method for recovering heat from dust-bearing gases produced in suspension smelting of sulphide concentrates, by bringing the gases into indirect heat exchange contact in a waste heat boiler, by separating the dusts from the cooled gases and by returning at least part of the separated dusts to the suspension smelting comprising admixing to the dust bearing gases produced in the suspension smelting process or into the slag a cooler, reacting fluid substantially prior to bringing the gases into indirect heat exchange contact in the waste heat boiler.

4,475,948

LITHIUM ALUMINATE/ZIRCONIUM MATERIAL USEFUL IN THE PRODUCTION OF TRITIUM

William E. Cawley, and Turner J. Trapp, both of Richland, Wash., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 26, 1983, Ser. No. 488,825
Int. Cl.³ F16N 57/04
U.S. Cl. 75—230 **6 Claims**

1. A composition for the generation of tritium upon neutron irradiation comprising lithium aluminate particles imbedded in a zirconium matrix.

4,475,949

ALKALI EARTH METAL OXIDE-BASED COATING COMPOSITIONS

Norman C. Ross, Allison Park, and Jeffrey J. Lettrich, Tarentum, both of Pa., assignors to Kimes Corporation, Allison Park, Pa.

Filed Nov. 10, 1982, Ser. No. 440,521
Int. Cl.³ C09D 5/08
U.S. Cl. 106—14.35 12 Claims

1. A noncarbonated complex comprising the reaction product of:

(a) a basic oxide selected from the group consisting of calcium and magnesium oxide and mixtures thereof;

(b) an organic sulfonic acid having an equivalent weight of about 300 to 750 grams per equivalent; and

(c) water;

wherein the molar ratio of basic oxide to organic sulfonic acid is at least 10:1; the molar ratio of water to basic oxide is less than 2.5:1 and greater than 0.5:1 when the basic oxide is at least 30 percent calcium oxide; and the molar ratio of water to basic oxide is less than 0.7:1 and greater than 0.3:1 when the basic oxide comprises substantially magnesium oxide and less than 30 percent calcium oxide.

4,475,950

PRINTING INK COMPOSITIONS CONTAINING ORGANOPHILIC CLAY GELLANT

Claude M. Finlayson, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 207,543, Nov. 17, 1980, abandoned. This application Apr. 26, 1982, Ser. No. 371,405
Int. Cl.³ C09D 11/02
U.S. Cl. 106—20 11 Claims

1. A printing ink comprising an organic ink vehicle having dispersed therein an ink coloring material and an organophilic clay gellant comprising the reaction product of a bentonite or hectorite clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of clay and a material selected from the group consisting of methyl trialkyl quaternary compound and benzyl trialkyl quaternary compound, said quaternary being selected from ammonium and phosphonium and wherein each of the alkyl groups contains 12 to 22 carbon atoms and the amount of said quaternary compound reacted with said clay being from 100 to 130 milliequivalents per 100 grams of clay, 100% active clay basis.

4,475,951

ENCAPSULATING SEALANT FOR THE TREATMENT AND PRESERVATION OF BUILDING MATERIALS

Lincoln R. Davis, Lincroft, N.J., assignor to NOW Industries, Inc., Asbury Park, N.J.

Filed Aug. 29, 1983, Ser. No. 527,568
Int. Cl.³ C04B 19/04
U.S. Cl. 106—74 4 Claims

1. An aqueous coating composition for building materials comprising a mixture of potassium silicates of various viscosities made by mixing the following:

A. a solution of about 9.05% K_2O and 19.5% SiO_2 with a viscosity of between 7 and 10 cps;

B. a solution of about 8.3% K_2O and 20.8% SiO_2 with a viscosity of between 30 and 65 cps;

C. a solution of about 12.5% K_2O and 26.3% SiO_2 with a viscosity of between 650 and 1200 cps; and

adding thereto a minor amount of a catalyst solution comprising a saturated, aqueous solution of $Na_2B_4O_7.10H_2O$ having a lesser amount of a dispersing agent contained therein.

4,475,952

TREATING CONCRETE

Louis J. Amara, Hartford; Peitro Paoletti, and Benito J. Tavana, both of Wethersfield, all of Conn., assignors to Invictus Unlimited, Inc., Hartford, Conn.

Continuation-in-part of Ser. No. 288,577, Jul. 30, 1981, Pat. No. 4,402,753. This application Aug. 30, 1983, Ser. No. 527,720
Int. Cl.³ C04B 7/354
U.S. Cl. 106—94 11 Claims

1. A method for water-proofing a shaped concrete article comprising providing a fresh concrete mixture and treating said mixture before curing with an effective amount of a liquid mixture of diesel fuel oil and rosin, said rosin being dispersed in said diesel fuel oil, and thereafter permitting the concrete article to dry to form a desired article which is resistant to penetration by water.

4,475,953

EMULSION AND METHOD OF MAKING SAME

Allen C. Ludwig; Larry W. Wolter, and Henry F. Frazier, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Feb. 24, 1983, Ser. No. 469,216
Int. Cl.³ C09K 3/00
U.S. Cl. 106—287.24 19 Claims

1. A method of making an emulsion of water in a sulfur reaction product, the latter being the reaction product of:

(1) elemental sulfur;

(2) from 5 to 20 weight percent of the sulfur reaction product of a first hydrocarbon;

(a) which is polyunsaturated with the unsaturated portions being reactable with elemental sulfur,

(b) which by itself when reacted with elemental sulfur forms a gel, and

(3) from 5 to 20 weight percent of the sulfur reaction product of a second hydrocarbon;

(a) which has one or more unsaturated groups reactable with elemental sulfur,

(b) which by itself when reacted with sulfur does not form a gel but forms brittle product, and

(c) which when the first and second hydrocarbons are so reacted with sulfur prevents said gel from forming;

said sulfur reaction product being formed by causing the aforesaid reactants to undergo an exothermic reaction;

said sulfur reaction product having a viscosity curve substantially that of asphalt, a penetration of from 5 to 100, a softening point of from 10° C. to 70° C. and a ductility of at least 100; comprising the steps of adding water free of added emulsifiers to a body of said sulfur reaction product to form said emulsion, the amount of said water added being from 2 to 50 weight percent of said emulsion.

4,475,954

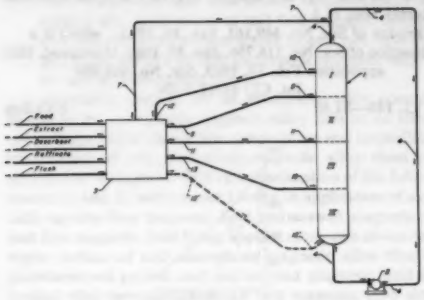
SEPARATION OF SUCROSE FROM THICK JUICE

Santi Kulprathipanja, Hoffman Estates; Richard W. Neuzil, Downers Grove, and Arthur M. Landis, Carpentersville, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 329,358, Dec. 9, 1981, abandoned. This application Apr. 15, 1983, Ser. No. 485,350
Int. Cl.³ C13D 3/14
U.S. Cl. 127—46.3 18 Claims

1. A process for separating sucrose from a feed mixture comprising thick juice which comprises contacting said mixture at adsorption conditions in an adsorption zone with an adsorbent exhibiting selectivity for said sucrose comprising a stabilized type Y zeolite, thereby selectively adsorbing said sucrose thereon, removing a raffinate stream from said adsorp-

tion zone, and thereafter recovering an aqueous sucrose-containing stream by passing a desorbent material into said adsorp-



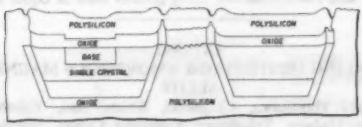
tion zone at desorption conditions to effect the displacement of sucrose from said adsorbent.

4,475,955

METHOD FOR FORMING INTEGRATED CIRCUITS BEARING POLYSILICON OF REDUCED RESISTANCE

Vipin N. Patel, Wyomissing, Pa., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 6, 1982, Ser. No. 447,287
Int. Cl.³ H01L *21/94, 21/428*
U.S. Cl. 148—1.5 **17 Claims**



1. A method of forming a layer of energy beam annealed polysilicon on an integrated circuit device precursor having regions of lower and higher energy beam reflection characteristics, wherein said regions of higher energy beam reflection characteristics are dielectrically isolated islands, and said regions of lower energy beam reflection characteristics are interisland areas of polycrystalline silicon positioned therebetween, comprising the steps of:

forming an isolating layer on the surface of said precursor;

forming a layer of polysilicon on said isolating layer;

depositing a layer of material capable of reflecting high energy beams over said polysilicon layer;

removing a portion of said reflecting material overlaying a region of lower energy beam reflection characteristics; and

exposing the precursor to a high energy beam.

4,475,956

METHOD OF MAKING HIGH STRENGTH FERRITIC DUCTILE IRON PARTS

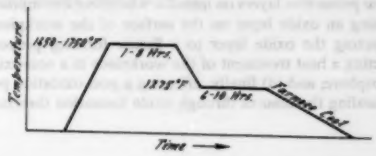
Bela V. Kovacs; Roman M. Nowicki, both of Bloomfield Hills, and Charles A. Stickels, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/00113, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983
PCT Filed Jan. 24, 1983, Ser. No. 475,679
Int. Cl.³ C21D *5/14;* **C22C** *37/04, 37/10*
U.S. Cl. 148—3 **10 Claims**

1. A method of making high strength ferritic ductile iron parts, comprising:

(a) casting an iron alloy melt in substantially the shape of the desired part, said melt consisting essentially of by weight 3.9–6.0% silicon, 3.0–3.5% carbon, 0.1–0.3% manganese, 0–0.35% molybdenum, no greater than .015% sulphur, no greater than 0.06% phosphorus, and nickel in an amount of at least 1.25%, an increased amount of Mo being present for a decreased amount of nickel so that when Ni is at the low end of its permitted range, Mo will be at its high end of permitted range, and the remainder iron, said mnelt having been subjected to nodularized agent to form nodules of graphite upon solidification;

(b) heat treating said cast part to provide a fully ferritic ductile iron microstructure with 9–14% by volume graph-



ite and a ferritic matrix containing Mo and Ni in solid solution, said iron having a yield strength of at least 75,000 psi, a tensile strength of at least 95,000 psi, and an elongation of at least 17%.

9. A high strength ferritic ductile iron composition, consisting of by weight 3.9–6.0% silicon, 3.0–3.5% C., 0.1–0.3% Mn, about 0.3% Mo, at least 1.25% Ni, 0.02–0.05% Mg, no greater than 0.015% sulphur, and no greater than 0.06% phosphorus, and the remainder essentially iron, the iron containing 9–14% by volume spheroidal graphite and 86–91% ferritic iron alloy with Mo and Ni being in solid solution, said iron having a yield strength of at least 75,000 psi, a tensile strength of at least 95,000 psi, and an elongation of a least 17%.

4,475,957

COATING COMPOSITION

Lothar S. Sander, Princeton, N.J., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Oct. 17, 1983, Ser. No. 542,860
Int. Cl.³ C23F *11/04*
U.S. Cl. 148—6.16 **20 Claims**

1. A no-rinse metal pretreatment composition for corrosion resistance comprising in approximate percent by weight:

CrO_3, about 5 to about 60% of which is in the reduced trivalent form of Cr	0.90–3.0
phosphoric acid (75%)	0.05–0.3
poly(ethyleneoxy) polymer of the structure $H(-OCH_2CH_2-)_nOH$, wherein n varies from about 2,000 to about 20,000, having a molecular weight of about 90,000 to about 900,000	0.03–0.12
water	q.s. 100

4,475,958

METHOD FOR THE MANUFACTURE OF DEFORMATION RESISTANT OXIDIC PROTECTIVE LAYERS

August Mühlratzer, Gilching; Bruno Stemmler, Karlsfeld, and Hans Zeilinger, Puchhein-Bahnhof, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellchaft, Fed. Rep. of Germany

Filed Nov. 8, 1982, Ser. No. 440,173

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145236

Int. Cl.³ C23C *11/08*

U.S. Cl. 148—6.35 **6 Claims**

1. Method for the manufacture of deformation-resistant oxidic protective layers on metallic workpieces; comprising (a) forming an oxide layer on the surface of the workpiece; (b) subjecting the oxide layer to a fissure forming process; (c) effecting a heat treatment of the workpiece in a non-oxidizing atmosphere; and (d) finally, effecting a post-oxidation process for healing the fissures through oxide formation therein.

4,475,959

NON-AQUEOUS BRAZING ALLOY PASTE

Anthony Liang, Belmont, and Ronald W. Cox, Menlo Park, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 13, 1983, Ser. No. 513,516

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—24 **4 Claims**

1. A non-aqueous brazing alloy paste consisting essentially of from about 60% by weight to about 95% by weight of a brazing alloy having particle size of from about 40 to about 120 microns and from about 5% to about 40% by weight of an organic vehicle consisting essentially of from 1 to about 5% by weight of a polyacrylic acid resin, from about 0.2% to about 5% by weight of a hydroxycellulose resin and from about 93.0% by weight to about 99.5% by weight of a hydroxylic solvent, wherein said paste has a gelatinous extrudable viscosity.

4,475,960

FLUX FOR BRAZING ALUMINUM AND METHOD OF EMPLOYING THE SAME

Satoshi Yamawaki; Atsushi Sugihara; Yasushi Kobayashi; Hiroshi Ishida; Yukio Kuramasu, and Ichisei Gotoh, all of Shizuoka, Japan, assignors to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 372,035, Apr. 26, 1982,. This application May 13, 1983, Ser. No. 494,372

Claims priority, application Japan, Mar. 29, 1982, 57-49035

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—26 **9 Claims**

1. A brazing flux consisting essentially of a mixture of fluoaluminate complexes containing Al, F, K, and Li atoms in said mixture, or a mixture of such complexes with aluminum fluoride, said flux having the Al, F, K, and Li atoms thereof present in amounts corresponding to the following proportions of the simple compounds:

aluminum fluoride about 53–62%

potassium fluoride about 35–44%

lithium fluoride about 2–7%

said flux containing up to about 2% entrained impurities, all percentages being by weight.

4,475,961

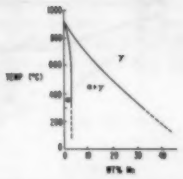
HIGH REMANENCE IRON-MANGANESE ALLOYS FOR MAGNETICALLY ACTUATED DEVICES

Sungho Jin, Gillette, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 349,161, Feb. 16, 1982, , which is a continuation of Ser. No. 116,759, Jan. 30, 1980, abandoned. This application Feb. 22, 1983, Ser. No. 468,089

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—31.55 **6 Claims**



1. Magnetic alloy comprising an amount of at least 98 weight percent Fe and Mn, Mn being in the range of 3–25 weight percent of said amount, magnetic induction B_r of said alloy being greater than or equal to a value which depends on weight percent Mn comprised in said amount, said value being defined in gauss by the approximate formula 20,000–500×(-weight percent Mn), magnetic squareness ratio of said alloy being greater than or equal to 0.95, and said alloy having uniaxially deformed anisotropic two-phase or multiphase microstructure and grain structure, particle length-to-diameter ratio in said microstructure being greater than or equal to 8.

4,475,962

ANNEALING METHOD FOR AMORPHOUS MAGNETIC ALLOY

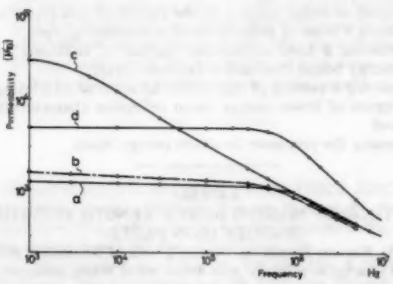
Masatoshi Hayakawa, Chigasaki; Koichi Aso, Yokohama; Satoru Uedaira, Yokohama; Yoshitaka Ochiai, Yokohama; Hideki Matsuda, Yokohama; Kazuhide Hotai, Sendai, and Kazuhiko Hayashi, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,645

Claims priority, application Japan, Jul. 8, 1982, 57-119013; Jul. 15, 1982, 57-123490

Int. Cl.³ C21D *1/04*

U.S. Cl. 148—108 **8 Claims**



1. Annealing method for an amorphous magnetic alloy comprising the steps of:

(a) preparing an amorphous magnetic alloy film;

(b) annealing said amorphous magnetic alloy film at an elevated temperature lower than Curie temperature and crystallization temperature of said amorphous magnetic alloy film under a application of a cyclically applied first

magnetic field and second magnetic field, said first magnetic field being applied along one direction in a major surface of said amorphous magnetic alloy film for a predetermined period, and said second magnetic field being applied after termination of said first magnetic field along a second direction perpendicular to said one direction in said major surface of said amorphous magnetic alloy film for said predetermined period.

2. Annealing method for an amorphous alloy comprising annealing an amorphous magnetic alloy film at an elevated temperature lower than Curie temperature and crystallization temperature of said amorphous magnetic alloy sheet under application of magnetic field of a combination of the following manners I and II, said manner I being an application of a cyclically applied first magnetic field and second magnetic field, said first magnetic field being applied along one direction in a major surface of said amorphous magnetic alloy film for a predetermined period, and said second magnetic field being applied after termination of said first magnetic field along a second direction perpendicular to said one direction in said major surface of said amorphous magnetic alloy film for said predetermined period, and said manner II being an application of a magnetic field perpendicular to said major surface of said amorphous magnetic alloy sheet.

4,475,963

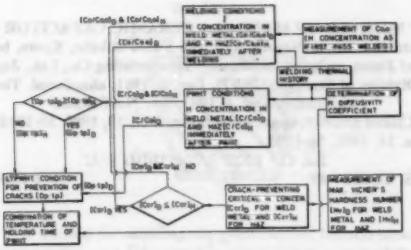
METHOD FOR POSTWELD HEAT TREATMENT

Eiji Takahashi, Akashi, and Kenji Iwai, Kobe, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 5, 1981, Ser. No. 231,913

Int. Cl.³ C21D *11/00*

U.S. Cl. 148—128 **7 Claims**



1. A method for low-temperature PWHT in multilayer welding, of low alloy steel which comprises;

determining a residual hydrogen concentration Co (cc/100 g) directly beneath the final welded layer immediately after completion of welding;

determining a crack-preventing critical hydrogen concentration Ccr (cc/100 g) to obtain a ratio of Ccr/Co;

determining the value of a product $D_p't_p$ of a hydrogen diffusivity coefficient D_p (cm^2/sec.) during the heat treatment and a holding time t_p (sec.) where a currently reached hydrogen concentration C (cc/100 g) becomes equal to the critical hydrogen concentration Ccr, on the basis of the relation of a ratio C/Co of the current hydrogen concentration C (cc/100 g) to the residual hydrogen concentration Co and a sum of a parameter τ(cm^2) of hydrogen diffusion of the formula given below and the product of $D_p't_p$;

measuring the temperature of the heat treatment at a suitable position of the weld; and

terminating the heat treatment at a time point when a time-integrated value of a hydrogen diffusivity coefficient D_{pi} (cm^2/sec.) at the measured temperature exceeds the value of $D_p't_p$ under given conditions

$$\tau = \int_0^{tn} D_f dt$$

wherein,

PWHT: postweld heat treatment,

D_f: a hydrogen diffusivity coefficient (cm^2/sec.) in an arbitrary weld portion during welding each unit layer; and tn: time (sec.) required for welding each unit layer and wherein the critical hydrogen concentration C_{cr}, is related to the Vicker's hardness number, H_v, such that C_{cr} ranges from 1.96 to 3.88 cc/100 g while H correspondingly ranges from 300 to 500.

4,475,964

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

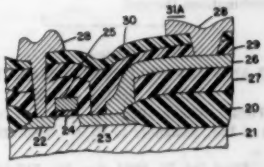
Syoji Ariizumi, Tokyo; Yasushi Fukatsu, and Fujio Masuoka, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 438,580, Nov. 2, 1982, , which is a continuation of Ser. No. 121,451, Feb. 14, 1980, abandoned. This application Oct. 24, 1983, Ser. No. 545,002

Claims priority, application Japan, Feb. 20, 1979, 54-18734; Jun. 27, 1979, 54-81126; Nov. 30, 1979, 54-155410

Int. Cl.³ H01L *21/225*

U.S. Cl. 148—187 **1 Claim**



1. A method of manufacturing a semiconductor device, comprising:

a step of forming a first polycrystalline silicon layer having a high impurity concentration directly on part of a semiconductor substrate having one conductivity type, said high impurity concentration being of the opposite conductivity type to that of said substrate;

a step of forming a diffusion region of impurities having the opposite conductivity type to that of said substrate in and contiguous to the principal surface of said semiconductor substrate by thermally diffusing impurities from said first polycrystalline silicon layer;

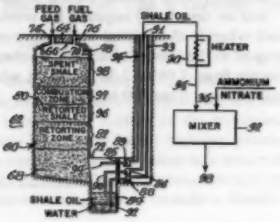
a step of forming, after a deposition of an insulating layer, a resistor comprising a second polycrystalline silicon layer having lower impurity concentration than that of said first polycrystalline silicon layer in such a manner that one end of the second polycrystalline silicon layer is in direct contact with said first polycrystalline silicon layer; and

a step of causing impurity diffusion from said first polycrystalline silicon layer through said one end of said second polycrystalline silicon layer into said second polycrystalline silicon layer by thermal treatment to obtain ohmic contact between said first and second polycrystalline silicon layers.

4,475,965
SHALE OIL EXPLOSIVES

Earl D. York, and Darrell D. Porter, both of Englewood, Colo., assignors to Standard Oil Company (Indiana) and Gulf Oil Corp., both of Chicago, Ill.

Filed Oct. 24, 1983, Ser. No. 545,054
Int. Cl.³ C06B *45/02*
U.S. Cl. 149—21 **15 Claims**



1. An ammonium nitrate shale oil explosive composition, consisting essentially of:

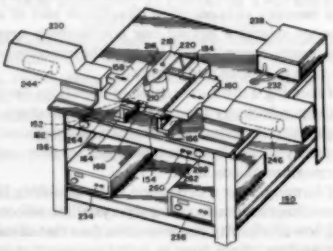
from about 2% to about 10% by weight shale oil containing particulates of oil shale ranging in size from less than one micron to 1000 microns, said shale oil having a substantially greater concentration of nitrogen than diesel number 2 fuel oil and natural petroleum crude oil, said particulates of oil shale being selected from the group consisting essentially of raw oil shale, retorted oil shale, combusted oil shale, and combinations thereof; and

from about 90% to about 98% by weight ammonium nitrate containing less than 2% by weight substantially inert material, said ammonium nitrate being selected from the group consisting essentially of granular ammonium nitrate, flaked ammonium nitrate, prilled ammonium nitrate, and combinations thereof.

4,475,966
METHOD AND APPARATUS FOR MANUFACTURING VIDEO DISC CADDY

Robert L. Turner, Morresville, and John J. Prusak, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,169
Int. Cl.³ B23K *19/04*; B29C *27/08*
U.S. Cl. 156—73.1 **19 Claims**



1. Method of fabricating a plastic jacket having an edge opening by ultrasonically welding a pair of T-sectioned side rails to a U-shaped enclosure; each of said side rails including a rib portion having an intermediate, perpendicularly-disposed flange portion; said U-shaped enclosure having a pair of oppositely-disposed panels interconnected along one edge thereof; said method comprising the steps of:

(A) inserting said U-shaped enclosure over a substantially flat spacer plate having external dimensions corresponding to the internal dimensions of said jacket;

(B) clamping said U-shaped enclosure between a pair of clamping plates to firmly hold said U-shaped enclosure against said spacer plate;

(C) inserting said flange portions of said T-sectioned side rails between the side edge portions of said U-shaped enclosure; and

(D) applying ultrasonic energy to said side rails to weld said side rails to said U-shaped enclosure to form said jacket.

12. Apparatus for fabricating a plastic jacket having an edge opening by ultrasonically welding a pair of T-sectioned side rails to a U-shaped enclosure; each of said side rails including a rib portion having an intermediate, perpendicularly-disposed flange portion; said U-shaped enclosure having a pair of oppositely-disposed panels interconnected along one edge thereof; said apparatus comprising:

(A) a substantially flat spacer plate having external dimensions corresponding to the internal dimensions of said jacket for supporting said U-shaped enclosure during fabrication;

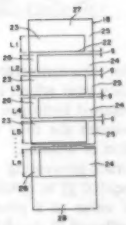
(B) a pair of clamping plates disposed about said spacer plate; said clamping plates securely pressing said U-shaped enclosure against said spacer plate; and

(C) a pair of welding horns movably mounted for motion between the respective retracted positions and advanced positions; said welding horns allowing the insertion of said flange portions of said T-sectioned side rails between the side edge portions of said U-shaped enclosure when occupying their respective retracted positions; said welding horns transmitting ultrasonic energy to said side rails to weld them to said enclosure to form said jacket upon disposition thereof at their respective advanced positions.

4,475,967
METHOD OF MAKING A CERAMIC CAPACITOR

Kazuhiko Kanai, Nagaokakyo, and Yukio Sakabe, Kyoto, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 328,927, Dec. 9, 1981, abandoned. This application Aug. 4, 1983, Ser. No. 520,336
Claims priority, application Japan, Dec. 19, 1980, 55-181019; Jan. 14, 1981, 56-4780
Int. Cl.³ B32B *31/04*; H01G *4/32*
U.S. Cl. 156—89 **6 Claims**



1. A process of making a ceramic capacitor, said process comprising the steps of:

forming a plurality of first and second inner electrodes on one surface of an elongated ceramic green sheet having first and second generally parallel longitudinal side edges, said first and second electrodes being alternately arranged in the longitudinal direction of said ceramic green sheet, an insulating gap of size g, being located between each adjacent electrode, said ceramic green sheet having a thickness t, each of said first inner electrodes being formed with one side edge thereof extending to said first side edge of said ceramic green sheet and another side edge thereof extending towards, but being spaced from, said second

side edge of said ceramic green sheet, each of said second inner electrodes being formed with one side edge thereof extending to said second side edge of said ceramic green ceramic sheet and another side edge thereof extending toward, but being spaced from, said first side edge of said ceramic green sheet;

rolling said ceramic green sheet into a multilayered cylindrical body of inner diameter d, said rolling step causing an elongation of said ceramic green sheet, said rolling step being formed in such a manner that each first inner electrode overlaps a respective second inner electrode, said ceramic green sheet being interposed therebetween, the length Ln of each successive electrode being equal to:

$$Ln=[d+(2n-1)t]\pi k-g$$

wherein n is the number of turns of the rolled ceramic green sheet, and k is a correction factor which compensates for the elongation of said sheet during the rolling step;

forming first and second outer electrodes at respective locations on the surface of said cylindrical body, said plurality of first and second inner electrodes being electrically connected to said first and second outer electrodes, respectively.

4,475,968

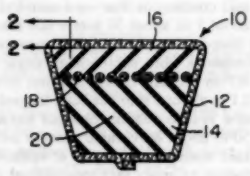
METHOD OF MAKING A COVERED V-BELT HAVING REDUCED COEFFICIENT OF FRICTION SIDES

James K. Brew, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 147,431, May 6, 1980, Pat. No. 4,355,994. This application Sep. 20, 1982, Ser. No. 420,537

Int. Cl.³ F16G *5/16*

U.S. Cl. 156—141 **4 Claims**



1. A method for reducing the coefficient of friction between a metal pulley and a wrapped, molded V-belt entrained thereabout, which comprises incorporating a metallic material into the cover stock of said belt by depositing said metallic material on the outside driving surface of a finished belt by means selected from sputtering and vacuum deposition.

4,475,969

LABEL ROLL MANUFACTURE

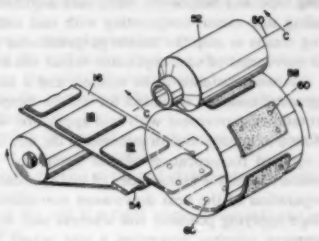
Charles F. Reed, Painesville, Ohio, assignor to Avery International Corporation, Pasadena, Calif.

Continuation of Ser. No. 870,837, Jan. 19, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 162,725

Int. Cl.³ B32H *3/16*

U.S. Cl. 156—152 **3 Claims**

1. In a method for labelling surfaces of simple curvature, such as cylindrical container walls, using a laminate comprising a long strip of paper label stock combined with liner material with the grain of the label stock running along the liner material, and wherein the label stock is cut to form labels supported on the liner material and excess label stock is stripped, and wherein the labels are subsequently liner-fed directly or indirectly onto said surfaces to be labelled with the direction of feed at the point of feed-off perpendicular to projections of the axis of curvature of said surfaces for proper application and proper partial wrapping of labels on said surfaces, the steps of repositioning successive labels following stripping of excess label stock, by removing successive labels from their original combination with liner material, changing the relative orientation between the labels and liner material by 90 degrees, and redepositing the labels on liner material



whereby the grain of the labels runs crosswise, and then liner-feeding labels directly or indirectly to said surfaces with the paper grain of the labels perpendicular to the direction of feed at the point of feed-off and parallel to the axes of curvature of said surfaces for maximum label flexibility during application and during partial wrapping of the labels onto said surfaces.

4,475,970

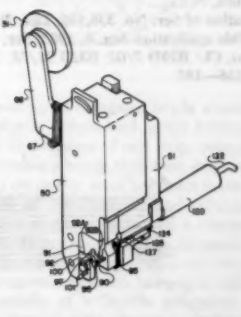
ALIGNING MEANS FOR TAPE SPLICER

Robert I. Farrow, and Richard L. Clark, both of Burlington, N.C., assignors to American Multimedia, Inc., Burlington, N.C.

Filed Oct. 7, 1983, Ser. No. 540,071

Int. Cl.³ B31F *5/00*; B65H *19/00*; B32B *31/00*; B65C *9/08*

U.S. Cl. 156—159 **12 Claims**



1. An apparatus for feeding and applying splicing tape to two adjacent tape ends positioned on a planar splice bed, comprising:

(a) a splicing tape applicator wheel mounted for rotation about a central axis and having a plurality of planar peripheral faces, each face defining a splicing tape carrying surface;

(b) a source of splicing tape for being applied to successive tape carrying surfaces;

(c) reciprocating means for moving a tape carrying surface of said applicator wheel perpendicularly into and out of contact with the two tape ends to be spliced and applying a length of splicing tape thereto;

(d) motion converting means cooperating with said reciprocating means and said applicator wheel for converting perpendicular movement of said applicator wheel into unison rotation of said applicator wheel thereby moving a next successive tape carrying surface into position for

application of the splicing tape during the next reciprocation;

(e) aligning means cooperating with said applicator wheel and said motion converting means for aligning successive planar surfaces of said applicator wheel in proper alignment with the planar splice bed after each application of splicing tape and before the next, said alignment means including stop means cooperating with said motion converting means to stop the unison perpendicular and rotational movement of said applicator wheel out of contact with the two tape ends to be spliced, and a stop means engagement member mounted for unison perpendicular and rotational movement with said applicator wheel and positioned to engage said stop means at the termination of each upward reciprocation of said applicator wheel to reposition successive planar sides of said applicator wheel in preparation of the next downward movement thereof into tape-applying position, and wherein said stop means engagement member comprises a star wheel having a plurality of outwardly projecting fingers, at least some of said fingers adapted to engage said stop means and thereby align said applicator wheel.

4,475,971

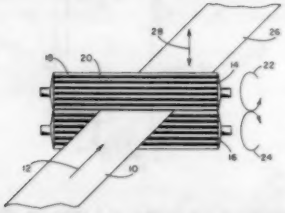
METHOD FOR FORMING STRONG CROSS-LAMINATED FILMS

Peter J. Canterino, Towaco, assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 336,106, Dec. 30, 1981, abandoned. This application Jun. 8, 1983, Ser. No. 500,807

Int. Cl.³ B29D *7/02*; **B32B** *31/18, 31/20, 31/30*

U.S. Cl. 156—163 **9 Claims**



1. A method of forming a cross-laminated film comprising the steps of:

(a) coextruding a composite film comprising a layer of lower melting thermoplastic and a layer of higher melting thermoplastic;

(b) feeding said composite film through a pair of matched rollers having meshing grooves and ridges, said composite film being fed through said rollers at an angle of travel of less than ninety degrees with respect to the axes of rotation of said rollers to provide a bias oriented composite film by stretching said composite film between said rollers; and

(c) forming a cross-laminated film by contacting lower melting thermoplastic layers of said oriented composite film under temperature conditions at which the lower melting thermoplastic layers adhere to one another.

4,475,972

IMPLANTABLE MATERIAL

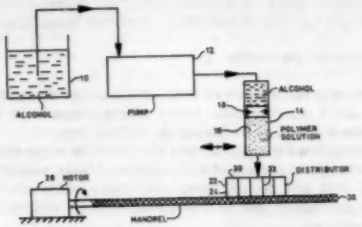
Edward W. C. Wong, Lexington, Mass., assignor to Ontario Research Foundation, Mississauga, Canada

Continuation-in-part of Ser. No. 309,692, Oct. 8, 1981, abandoned. This application Apr. 22, 1982, Ser. No. 370,661

Claims priority, application Canada, Oct. 1, 1981, 387143; United Kingdom, Mar. 2, 1982, 8206082

Int. Cl.³ B65H *81/00*; **A61F** *1/00*

U.S. Cl. 156—167 **10 Claims**



1. A method of forming a porous flexible biocompatible and biocompliable tubular vascular graft, which comprises:

extruding an extrudable biocompatible and biocompliable thermoplastic polymeric material through an opening having a diameter larger than the intended diameter of fibers to be drawn therefrom, said polymeric material being capable of forming flexible fibres therefrom,

drawing a continuous fibre of diameter of less than about 100 microns from said extruded material by attenuating the extruded material using a drawing force applied longitudinally of the fibre,

winding said continuous fibre on a mandrel having a diameter of about 1 to about 50 mm while simultaneously providing fibre-to-fibre bonding between overlying fibres as the continuous fibre subtends an angle of about 10° to about 80° to the axis of the mandrel until a thickness of about 0.1 to about 2 mm has been formed on said mandrel to form a porous tubular product having a porosity of about 50 to about 80 volume percent on said mandrel,

rotating said mandrel on its axis at sufficient speed during said winding to apply said longitudinal drawing force to said fibre to effect the drawing and attenuation of said continuous fibre from said extruded polymeric material, and

removing said porous tubular product from said mandrel to provide said porous flexible biocompatible and biocompliable tubular vascular graft.

4,475,973

METHOD FOR PRODUCTION OF A FLUID SEPARATION MODULE

Toshiaki Tanaka; Ichiro Kawata; Keisuke Nakagome, and Koji Matsui, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Company, Ltd., Osaka, Japan

Filed Sep. 15, 1982, Ser. No. 418,295

Claims priority, application Japan, Sep. 16, 1981, 56-138130[U]

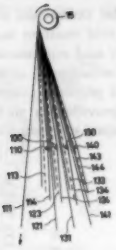
Int. Cl.³ B01D *31/00*

U.S. Cl. 156—184 **6 Claims**

1. A method for production of a fluid separation module having a hollow mandrel with one or more layer arrangements, each comprising a plurality of layer elements, wherein said method comprised the steps of:

horizontally fastening said mandrel to a means for rotating said mandrel around its axis so that said layer arrangements hang downward, each of said layer arrangements comprising a plurality of layer elements which consist of a spacing layer for the passage of a permeated solution, a

first semi-permeable membrane sheet, another spacing layer for the passage of a feed solution, and a second semi-permeable membrane, in sequence, an envelope being consequently formed by said first semi-permeable membrane sheet in each individual layer arrangement and said second semi-permeable membrane sheet in the neighboring layer arrangement, in such a manner that said permeated solution spacing layer in each individual layer arrangement is disposed in said envelope, and



rotating said mandrel around its axis by means of said rotating means so as to wind said layer arrangements thereon until most of the layer arrangements have been wound, and

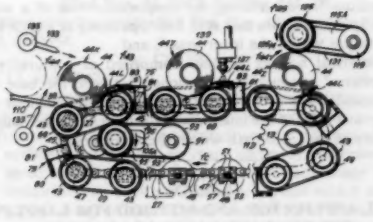
after most of the layer arrangements have been wound, applying proper tension to at least one of said permeated solution spacing layers by means of a tension system, the angle of said spacing layer to which tension is applied ranging from about +30° to about −30° from a vertical plane through the axis of said mandrel.

4,475,974

APPARATUS AND METHOD FOR GLUEING THE OUTER END OF A STICK OF WOUND PAPER MATERIAL

Fabio Perini, P.O. Box 338 (Mugnano), 55100 Lucca, Italy

Filed Nov. 26, 1982, Ser. No. 444,567
Claims priority, application Italy, Dec. 3, 1981, 9580 A/81
Int. Cl.³ B65H *19/26*
U.S. Cl. 156—187 **14 Claims**



1. An apparatus for glueing the outer end of a web of paper which has been wound into a roll, said apparatus including

a plurality of pairs of rollers arranged to receive and support a roll of paper,

a conveyor for carrying the pairs of rollers,

drive means for the conveyor to move each pair of rollers in sequence from a receiving station to a glueing station to a closing station,

drive means to rotate the rollers of each pair whereby to unwind the end of the web from the roll,

a support for said unwound end located adjacent one roll of each pair,

an applicator for applying adhesive to the unwound end while it is on the support in the glueing station,

means adjacent the closing station to rotate the roll whereby to re-wind the end of the web with the glue thereon onto the roll.

11. The method for winding a web of paper into the roll and for glueing the end of the web against the roll, said method including

winding a web of paper into a roll,

placing the roll on a carrier at a receiving station,

rotating the roll to unwind the end of the web,

moving the web at a right angle to the roll-axis to a glueing station,

supporting the end of the web beneath an adhesive applicator at the glueing station,

applying adhesive to the end of the web while it lies upon the support,

moving the roll at a right angle to the roll-axis to a closing station,

rotating the roll to re-wrap the end of the web against the roll,

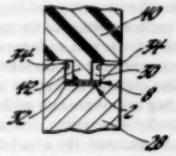
discharging the roll from the carrier.

4,475,975

DECORATING COATED ALUMINUM FOR EXTRUSION ENCAPSULATION

Paul E. Talley, and Harry T. Rochford, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1980, Ser. No. 218,024
Int. Cl.³ B44C *1/14, 3/00;* B32B *31/00;* C09J *3/02*
U.S. Cl. 156—234 **4 Claims**



1. A method of making an elongated bright aluminum strip carrying a longitudinally oriented ink stripe having well-defined edges interior to the edges of said strip, comprising:

continuously advancing a bright aluminum strip coated with a lacquer based on one or more polymers taken from the group consisting of vinyl chloride and cellulose acetate propionate polymers under tension in a channel of like width, said channel being located on a circumference of a thermally conductive metal impression cylinder;

advancing an elongated tensioned hot stamp foil laminate consisting essentially of a flexible polymeric substrate layer, a release layer, a clear protective coating layer, an ink layer defining a desired decorative pattern, and an adhesive layer along with the aluminum strip in the cylinder channel, the adhesive surface of the foil running adjacent lacquer surface of the aluminum strip;

rotating a resilient plate cylinder in printing engagement with the metal impression cylinder such that the impression cylinder is driven by the plate cylinder and such that a circumferential printing tongue carried on the surface of the plate cylinder is disposed within a portion of the channel to impress the desired decorative stripe onto the aluminum strip, said resilient plate cylinder being maintained at an elevated temperature to soften the ink layer of the hot stamp foil laminate;

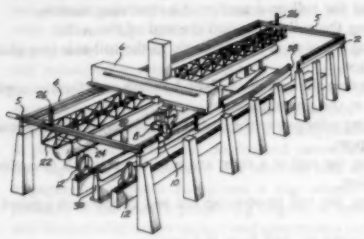
maintaining the aluminum strip in contact with the hot stamped foil and cooling said strips to a temperature whereat the ink pattern sets on the aluminum foil; and

thereafter separating the striped strip from the hot stamped foil and residual pattern thereon.

4,475,976
METHOD AND APPARATUS FOR FORMING COMPOSITE MATERIAL ARTICLES

Robert F. Mittelstadt, Auburn, and George R. Stumpf, Jr., Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 23, 1983, Ser. No. 565,187
Int. Cl.³ B29H 17/36
U.S. Cl. 156—286 8 Claims



1. Apparatus for forming a composite material article having a desired shape, said apparatus comprising:

a mandrel having a vacuum ported upper surface portion that conforms to said desired shape;

a seal carried by the mandrel and surrounding the perimeter of said upper surface portion;

a flexible bag;

inflating means for inflating the bag into a stretched condition;

lowering means for lowering the bag in said condition over said upper surface portion of the mandrel and into sealing engagement with the seal, to form a ply of fiber reinforced composite material that has been laid on said upper surface portion to the shape of said upper surface portion, and for raising the bag out of contact with the mandrel; and

vacuum means for evacuating, through said upper surface portion of the mandrel, the area between the bag and the mandrel and within the seal, to compact said ply.

6. A method of forming a composite material article, comprising:

laying a ply of fiber reinforced composite material onto a vacuum ported mandrel having a shape conforming to the desired shape of the article;

inflating a flexible bag into a stretched condition;

lowering the inflated bag over the mandrel to form the ply to the shape of the mandrel, and bringing a portion of the bag into sealing engagement with a seal carried by the mandrel around the perimeter of the formed ply;

applying a vacuum through the mandrel to the area between the bag and the mandrel and within the seal to compact the ply;

raising the bag to take it out of contact with the mandrel and the ply; and

laying additional plies of fiber reinforced composite material as necessary to obtain a desired thickness, and forming and compacting each such additional ply before laying another ply.

4,475,977
NITRIDE ETCH BATH

Joseph V. Duan, Santa Clara, Calif., assignor to Retrotec, Inc., San Jose, Calif.

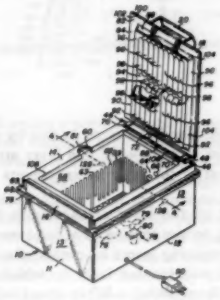
Filed May 23, 1983, Ser. No. 496,834
Int. Cl.³ B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—345 13 Claims

1. An improved nitride etch bath comprising, in combination;

an outer housing including a base and a plurality of vertical walls connected to said base and open at the top, said base including a center penetration;

an inner vessel for containing an acid bath and mounted within the outer housing and comprising a bottom with a center penetration vertically aligned with said base center penetration of the outer housing, a plurality of vertical sides connected to said bottom with a continuous first flange lip connected to a continuous top of said vertical sides of the inner vessel, said first flange lip sealed to a continuous top edge of said vertical walls of the outer housing;

a condensing collar comprised of an inert, non-breakable, non-flammable acid resistant material mounted above and formed to cover said continuous first flange lip, the condensing collar including a downward sloping inner peripheral edge in physical communication with said first flange lip for providing a surface for sealing the inner vessel against liquid evaporation;



a retaining ring mounted about a plurality of edges of said inner vessel continuous first flange lip and heat sealed to the condensing collar at said edges for partially enclosing said first flange lip and securing the condensing collar in position above the first flange lip;

a condensing lid mounted above and hinged to the condensing collar and including an upward sloping bottom peripheral edge for providing a seal between said upward sloping bottom peripheral edge of the condensing lid and said downward sloping inner peripheral edge of the condensing collar and further including a cycling condensing medium for controlling the evaporation rate of a water component within said acid bath operating at a high temperature within the inner vessel; and

an electrical heating element comprised of a plurality of electrical conductors sandwiched between the base and vertical walls of the outer housing and the bottom and vertical sides of the inner vessel for increasing the temperature of said acid bath within the inner vessel.

4,475,978
LABEL APPLICATOR AND METHOD FOR LABELING THE FORWARD FACES OF ARTICLES

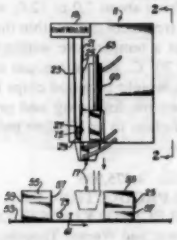
James C. Bartl, LaHabra, Calif., assignor to Label-Aire Inc., Fullerton, Calif.

Division of Ser. No. 267,252, May 26, 1981, Pat. No. 4,390,386.
This application Jan. 28, 1983, Ser. No. 461,699
Int. Cl.³ B32B 31/00; B65H 25/00; B44C 1/00; B65C 9/18
U.S. Cl. 156—497 11 Claims

1. A label applicator for labeling articles which are moved in a row through a labeling station wherein each of the articles has a front face and a back face with each of said front face and back face being a transverse face which faces transversely to the direction of movement of the articles, said label applicator comprising:

a supporting structure;

a labeling head;
means for mounting the labeling head on the supporting structure for movement between a retracted position in which the labeling head is out of the path of movement of the articles and an extended position in which the labeling head is in the path of movement of the articles;
dispensing means on the supporting structure for dispensing a label onto the labeling head when the labeling head is in the retracted position;
said labeling head having a label receiving face for receiving the label from the dispensing means, said label receiving face being generally transverse to the direction of article



movement when the labeling head is in said extended position;
means for releasably retaining the label on the label receiving face of the labeling head;
means for moving the labeling head to said extended position so that the label receiving face is in the path of movement of the articles and generally transverse thereto;
means for transferring the label from the label receiving face of the labeling head to one of the transverse faces of the article at the labeling station while the labeling head is in the extended position; and
means for moving the labeling head to the retracted position.

4,475,979

METHOD AND APPARATUS FOR TRANSFERRING A TONER IMAGE FROM MOVING PHOTOCONDUCTOR

Hermann Idstein, Oestrich-Winkel; Dieter Silbereisen, Taunusstein, and Hermann Reininger, Niedernhausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,299

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145984

Int. Cl.³ B41F *23/04*

U.S. Cl. 156—542 **14 Claims**

1. An apparatus for transferring a toner image from a photoconductive surface to an image carrier, comprising:
(a) means for moving a substantially planar photoconductive surface tangentially to an image carrier at a predetermined speed relative to said image carrier, said image carrier comprising an open pore metallic surface which is transported along an arcuate path into and away from contact with said photoconductive surface;
(b) means for moving said image carrier in an arcuate path into and away from contact with said photoconductive surface;
(c) means for establishing contact in a transfer zone between said photoconductive surface and said image carrier along a single line of contact which is transverse to the direction in which said photoconductive surface is moving and for progressively contacting said photoconductive surface and image carrier line-by-line in said direction; and
(d) means for applying pressure and heat along said line of contact sufficient to transfer said toner image to said image carrier and to anchor, solely by action of pressure and heating, toner particles which comprise said toner image in pores comprising said metallic surface along said line of contact.

4,475,980

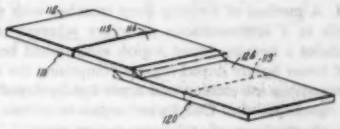
SOLID STATE PRODUCTION OF MULTIPLE SINGLE CRYSTAL ARTICLES

Chris C. Rhemer; Scott E. Hughes, and William J. Gostic, all of Jupiter, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,872

Int. Cl.³ C30B *1/08*

U.S. Cl. 156—603 **6 Claims**



1. A method for producing single crystal material of controlled crystallographic orientation including the steps of:
a. providing a first article which is comprised of a single crystal portion and a polycrystalline portion receptive to grain growth, said two portions being separated by a boundary which is capable of movement into the polycrystalline portion under proper conditions;
b. providing a second article comprised of polycrystalline material which is receptive to grain growth;
c. bonding the first and second articles together to form a third article so that the polycrystalline portion of the first article is bonded to the second article; said bonding being performed by a process which does not adversely affect the receptivity of the polycrystalline material to grain growth, which produces a joint which does not impede the passage of the single crystal boundary and which does not cause nucleation of new grains at the bond interface;
d. treating the bonded article in a thermal gradient so as to cause the single crystal portion to grow through the bond and into the second article material.

4,475,981

METAL POLISHING COMPOSITION AND PROCESS

William V. Rea, Newark, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 28, 1983, Ser. No. 546,783

Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—636 **23 Claims**

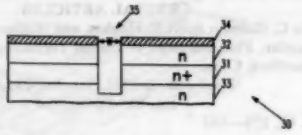
21. A process for polishing a nickel or nickel alloy surface comprising:
(a) mechanically rubbing the surface by contacting the surface with a rotating polishing pad;
(b) contacting the surface with an aqueous suspension of aluminum oxide powder containing a chlorine-containing mild oxidizing agent; and
(c) thereafter applying an aqueous suspension of colloidal aluminum oxide to the surface while the rubbing is continued whereby the aqueous suspension of (b) is mixed therewith causing chlorine in the aqueous suspension of (b) to be freed.

4,475,982

DEEP TRENCH ETCHING PROCESS USING CCl_2F_2/AR AND CCl_2F_2/O_2 RIE

Fang-shi J. Lai, Peekskill, and Ronald N. Schulz, Salt Point, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,769
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—643 20 Claims



1. A method of forming deep trenches with uniform sidewalls in a semiconductor structure wherein said structure includes a heavily doped region sandwiched between upper and lower lightly doped regions comprising the steps of:

reactively ion etching said upper lightly doped region in an atmosphere of CCl_2F_2 and argon to at least a portion of the thickness of said upper region, and,

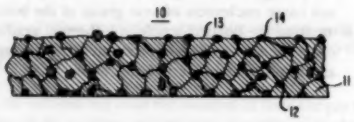
subsequently reactively ion etching any remaining thickness of said upper region and said heavily doped region and at least a portion of said lower lightly doped region in an atmosphere CCl_2F_2 and oxygen.

4,475,983

BASE METAL COMPOSITE ELECTRICAL CONTACT MATERIAL

Frank E. Bader, Bexley, Ohio, and Martin L. Green, New Providence, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 3, 1982, Ser. No. 414,595
Int. Cl.³ C23F 1/02; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—656 15 Claims



1. Method for producing an article comprising an electrical contact comprising a composite material, the method comprising

(a) forming the composite comprising a matrix metal and an electrically conducting particle material in particulate form,

characterized in that

(b) the matrix metal is a base metal and the particle material is harder and more corrosion resistant than the matrix metal and the oxides and sulfides of the matrix metal,

(c) the particles of the particle material have an average diameter between about 0.1 μm and about 100 μm, and the volume fraction of particle material in the composite is between about 1% and about 50%, and the method further comprises

(d) carrying out, subsequent to (a), a differential material removal step on at least one surface of the composite, with the removal rate of the matrix metal being greater than the removal rate of the particle material, thereby creating a "sandpaper" surface having particles projecting above the matrix surface.

4,475,984

PROCESS FOR PRETREATING WOOD CHIPS WITH MONOPEROXY SULFURIC ACID OR ITS SALTS PRIOR TO ALKALINE PULPING

John J. Cael, Washingtonville, N.Y., assignor to International Paper Co., New York, N.Y.

Division of Ser. No. 293,752, Aug. 17, 1981, Pat. No. 4,406,061.
This application Jun. 20, 1983, Ser. No. 506,173
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ D21C 1/04, 3/02
U.S. Cl. 162—76 2 Claims

1. A process for pulping wood chips comprising pretreating said wood chips with monoperoxy sulfuric acid or its salts at a pH within the range from about 2.0 to 12.0, wherein the pretreatment comprises a treatment time within the range about of 1 to about 72 hours at a temperature within the range from about 20° C. to about 70° C. and an amount of persulfate ion based on the oven dry weight of wood chips from about 0.35 percent to about 35 percent; following said pretreatment subjecting said pretreated chips to an alkaline pulping process.

4,475,985

PROCESS FOR THE PRODUCTION OF A DIAPHRAGM FOR ELECTROLYTIC CELLS

Werner Kleinloh, Haltern, and Werner Thronberens, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,551
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144372
Int. Cl.³ B29J 5/00
U.S. Cl. 162—219 9 Claims

1. In a process for the production of a diaphragm for electrolytic cells wherein the diaphragm is accreted on vertically disposed grid surfaces of a hollow diaphragm support from a slurry having a high solids content of diaphragm material, and the diaphragm is subsequently dried, and optionally aftertreated at an elevated temperature, the improvement which comprises

periodic lifting and lowering the diaphragm support to provide an oscillating vertical motion with predetermined frequency, amplitude, and velocity within the slurry during accretion of the diaphragm material from an accretion tank;

continuous measuring the level height of the slurry within said tank;

maintaining a predetermined spacing of a topside of the diaphragm support in an upper reversal point of the oscillating motion from the instantaneous level of the slurry within the tank;

maintaining a minimum distance of an underside of the diaphragm support from the bottom of the accretion tank; and

maintaining a predetermined suction pressure within a hollow space of the diaphragm support whereby a diaphragm with a diaphragm area up to 60 m^2 having a uniform thickness and uniform packing density is produced.

4,475,986

STABLE ACTIVATED CARBON PROCESS USING A MOVING GRATE STOKER FURNACE

Jimmy B. Smith, Columbia, Tenn., assignor to Peabody Development Company, St. Louis, Mo.

Filed Sep. 7, 1983, Ser. No. 530,043
Int. Cl.³ B01J 8/12, 21/18; C10B 57/02
U.S. Cl. 201—7 4 Claims

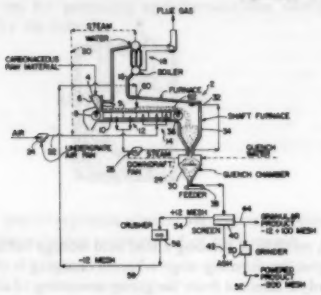
1. A process for producing activated carbon from carbonaceous granular raw starting material which comprises

partly devolatilizing said starting material by feeding a bed thereof horizontally through a chain grate furnace from

an input end thereof to a laterally spaced output end thereof,

further devolatilizing the partly devolatilized material by forming a downwardly moving stack thereof in a shaft furnace disposed to receive the material from the output end of the chain grate furnace,

cooling the further devolatilized material by passing the same from the bottom of the stack through a water quench chamber, wherein the cooled material comprises particles ranging in size from relatively large to relatively small and predominantly of relatively large size and which large particles are characterized by relatively poor surface-to-size ratio



and which small particles are characterized by comparatively good surface-to-size ratio,

splitting the cooled material according to particle size in a screen to produce an end product consisting of part thereof of said relatively small particle size while splitting off the particles predominantly of said relatively large size,

crushing the split-off relatively large size particles to relatively small size, and

recirculating the crushed particles with the raw starting material passing through the chain grate and shaft furnaces and water quench chamber.

4,475,987

METHOD OF AND APPARATUS FOR THE MIXING AND PROCESSING OF FRAGILE MATERIAL AND FRAGMENTEL SOLIDS

Frank Forbes, Lakewood, Colo., assignor to Dravo Corporation, Pittsburgh, Pa.

Division of Ser. No. 322,771, Nov. 19, 1981, Pat. No. 4,381,989. This application Dec. 29, 1982, Ser. No. 454,329

Int. Cl.³ C10B *1/06, 31/06, 53/06, 53/08*

U.S. Cl. 202—99 **2 Claims**

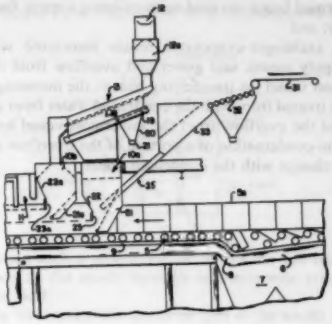
1. Apparatus for the processing of coarse hard fragments of rock-like nature and fragile agglomerates comprised of fines produced in crushing the original rock-like material into fragments comprising:

(a) a bin, having a choke-feed means at the bottom thereof, for receiving the fragments following the crushing operation and after screening out the fines;

(b) a travelling heat processing grate onto which the bin is arranged to deposit the fragments across the full width of the grate through said choke-feed means;

(c) an agglomerating facility into which the fines screened from the crushed fragments are delivered and converted into formed agglomerates; and

(d) a chute into which the agglomerates are discharged from the agglomerating facility, the chute having an upper end and having its lower end divided into a series of individually spaced pipe-like conduits extending down into the bin at spaced intervals across the full width of the bin and terminating in the vicinity of the entrance of the choke-feed means at the bottom portion of the bin but above the level of the grate at a level where the agglomerates are protected from the impact of fragments being continuously discharged into the bin but where the agglomerates leaving the ends of the conduits will diffuse through the mass of fragments as they move down the choke-feed means and out onto the grate.



4,475,988

PROCESS FOR DISTILLING WATER AND DISTILLATION APPARATUS

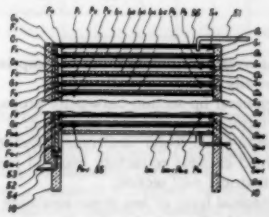
Kenji Tsumura, Nishinomiya, and Masayuki Yamashita, Mishima, both of Japan, assignors to Oriental Metal MFG. Co., LTD., Hyogo, Japan

Continuation of Ser. No. 375,687, May 6, 1982, abandoned, which is a division of Ser. No. 129,740, Mar. 12, 1980, Pat. No. 4,329,205. This application Dec. 28, 1983, Ser. No. 566,773

Claims priority, application Japan, Mar. 22, 1979, 54-34051; Aug. 11, 1979, 54-102576

Int. Cl.³ B01D *3/02*

U.S. Cl. 202—174 **3 Claims**



1. An apparatus for distilling water comprising:

a multi-stage structure body including a stacked plurality of dish-like vessels having horizontal bottoms and horizontally U-shaped packings interposed between respective dish-like vessels forming a plurality of slit openings between vessels for taking out condensed water, said vessels each having an overflow pipe attached through its bottom;

porous water-absorptive sheets stuck to the undersurfaces of the bottoms of said vessels and extending through said slit openings;

water supply means for supplying water to be treated to the uppermost vessel of said stacked plurality of vessels;

means for heating the bottom surface of the bottom of the lowermost vessel of said stacked plurality of vessels;

a condensed water collecting gutter located below the slit

opening of the lowermost vessel, said porous sheets extending to said gutter;

a casing for covering the side walls of said multi-stage structure body, the side wall in which the slit openings are formed being covered so as to leave a space for said gutter; and

heat exchanger-evaporator means associated with water supply means, said gutter and overflow from the lowermost vessel for transferring heat to the incoming water to be treated from both the condensed water from said gutter and the overflow from the lowermost vessel by evaporation-condensation of a portion of the overflow and direct exchange with the condensed water.

4,475,989

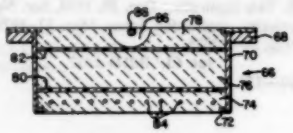
INSULATING CHARGING HOLE COVER

George R. Cain, and Stanley T. Sczerba, both of Pittsburgh, Pa., assignors to Raymond Kaiser Engineers Inc., Oakland, Calif.

Continuation-in-part of Ser. No. 334,655, Dec. 28, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 481,561

Int. Cl.[3] C10B *25/24, 43/14*

U.S. Cl. 202—251 12 Claims



1. A coke oven charging hole cover comprising:

(a) a generally cylindrical wall section;

(b) a peripheral lip section outwardly projecting from the upper terminal end of said wall section;

(c) a cast-in-place lower horizontal layer of dense fiber reinforced castable refractory material positioned inside the cylindrical wall section;

(d) a horizontal layer of less dense insulating material positioned inside the cylindrical wall section and superimposed over said layer of dense fiber reinforced refractory material;

(e) a cast-in-place upper horizontal layer of dense fiber reinforced refractory material superimposed over the horizontal layer of less dense insulating material;

(f) metallic radiant heat reflecting means interposed between said layer of less dense insulating material and said upper and lower layers of dense fiber reinforced refractory material;

(g) a wire mesh fixed interiorly to said cylindrial wall section and cast into the lower layer of dense fiber reinforced refractory material so as to retain said layers of dense fiber reinforced refractory material and said layer of less dense insulating material inside said cylindrical wall section; and

(h) ferrous metal material cast into the upper layer of dense fiber reinforced refractory material in a sufficient amount to render the charging hole cover magnetically liftable.

4,475,990

METHOD OF FORMING LEAD STORAGE BATTERIES

Takahashi Katsuhiro, Chigasaki; Watanabe Keiichi, Amagasaki; Jinbo Hiroyuki, Kamakura, and Hoshihara Naoto, Chigasaki, all of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Kadoma, Japan

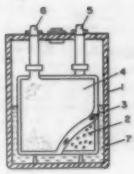
PCT No. PCT/JP83/00097, § 371 Date Dec. 2, 1983, § 102(e) Date Dec. 2, 1983, PCT Pub. No. WO83/03714, PCT Pub. Date Oct. 27, 1983

PCT Filed Mar. 29, 1983, Ser. No. 563,418

Claims priority, application Japan, Apr. 6, 1982, 57-57519; Apr. 6, 1982, 57-57520; Jul. 5, 1982, 57-117286

Int. Cl.[3] H01M *10/44*

U.S. Cl. 204—2.1 7 Claims



1. A method of forming a lead acid storage battery comprising a primary forming stage wherein charging is effected in an electrolyte selected from the group consisting of alkaline aqueous solutions, neutral aqueous solutions and dilute aqueous sulfuric acid solutions and a secondary forming stage wherein charging is effected in a concentrated sulfuric acid-acidic electrolyte.

4,475,991

METHOD OF DIFFUSION CLADDING A FE-CONTAINING BASE MATERIAL FOR DECORATIVE ARTICLES AND ORNAMENTS WITH PRECIOUS METAL CONSTITUENTS INCLUDING AG

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo K.K., Japan

Filed Mar. 25, 1983, Ser. No. 479,022

Int. Cl.[3] C25D *5/10, 5/50;* C23B *5/52*

U.S. Cl. 204—15 1 Claim

1. A method of diffusion cladding a Fe-containing metallic material for decorative articles and ornaments with a silver-containing precious metal alloy, which comprises a first step of plating selected surfaces of the metallic material with the constituents of said alloy, including at least one of the metals selected from the group consisting of Au, Pt, and Pd, but excluding Ag, in any desired order and one constituent at a time in a plurality of first successive layers, heating said first layers to cause them to diffuse to each other and to the metallic material; a second step of plating said surfaces further with all or selected constituents of said alloy, including said one metal and Ag, in any desired order and one constituent at a time in a plurality of second successive layers, and heating said second plurality of layers to cause them to diffuse to each other and to the first layers.

4,475,992
CYCLOHEXADIENE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Mitsuo Akada; Tsunehiko Masutomi, both of Itano; Yasuo Shimizu, Tokushima; Shigeru Torii, Akaiwa, and Hideo Tanaka, Okayama, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

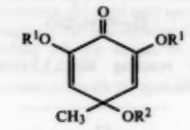
Division of Ser. No. 394,912, Jun. 22, 1982, Pat. No. 4,429,164. This application Jun. 3, 1983, Ser. No. 500,949

Claims priority, application Japan, Oct. 29, 1980, 55-152632; Feb. 25, 1981, 56-27474; Feb. 25, 1981, 56-27475

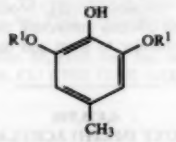
Int. Cl.³ C25B *1/00*

U.S. Cl. 204—59 R **9 Claims**

1. A process for preparing cyclohexadienone derivatives represented by the formula



(wherein R^1 and R^2 represent a lower alkyl group), comprising the step of electrolyzing a compound of the formula



(wherein R^1 is as defined above) in the presence of a lower aliphatic alcohol and a neutral supporting electrolyte, to produce the cyclohexadiene derivative.

4,475,993
EXTRACTION OF TRACE METALS FROM FLY ASH

Milton Blander, Palos Park, Ill.; Chien M. Wai, Moscow, Id., and Zoltan Nagy, Woodridge, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 15, 1983, Ser. No. 523,492

Int. Cl.³ C25C *1/06, 1/12, 1/16, 1/18*

U.S. Cl. 204—64 T **7 Claims**

1. A process for recovering one or more trace metals from a fine grained fly ash having a silicate base and a surface with deposits of the trace metals in a concentration less than about 1 wt. %, the trace metal being selected from the group consisting of Ag, Cu, Fe, Cd, Ga, Mn, Pb, Ti, Zn and mixtures thereof, comprising the steps of

contacting the fly ash with $AlCl_3$ in an alkali halide melt for a time sufficient for the $AlCl_3$ and trace metals to react and form trace metal compositions soluble in the melt and a silicate based residue, and

separating the residue from the melt.

4,475,994
METHOD AND APPARATUS FOR SEPARATING OXYGEN FROM A GASEOUS MIXTURE

Robert R. Gagné, Pasadena, and Matthew L. Marrocco, III, Santa Ana, both of Calif., assignors to Maxdem Incorporated, Pasadena, Calif.

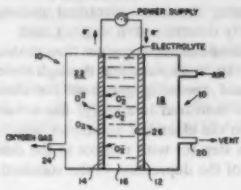
Filed Dec. 27, 1983, Ser. No. 565,921

Int. Cl.³ C25B *1/04*

U.S. Cl. 204—129 **31 Claims**

1. A process in which an electrochemical cell is used to separate oxygen from a mixture of gases, the process comprising the steps of:

contacting the cathode of an electrochemical cell with a gaseous mixture comprising oxygen to thereby reduce such oxygen by a single electron to its superoxide ion;



transporting such a superoxide ion across the cell from the cathode to the anode through an electrolyte contained therein; and

oxidizing the superoxide ion to oxygen at the anode where said oxygen is discharged as oxygen gas.

4,475,995
METHOD FOR ELECTROCHEMICAL REMOVAL OF METALLIC WORK MATERIAL

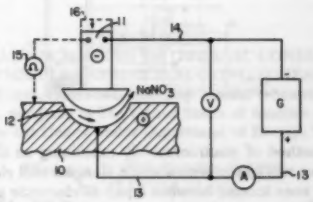
Gerhard Ziegler, and Alfred Thilow, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 13, 1983, Ser. No. 484,567

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220433

Int. Cl.³ B23P *1/00, 1/12*

U.S. Cl. 204—129.2 **11 Claims**



1. Method for electrochemical removal of metallic material from a raw workpiece (10) by a tool electrode (11) to achieve a final desired or standard volume of a depression in a surface of the raw workpiece including the steps of

(a) providing a standard workpiece having a depression which has said final desired or standard volume;

(b) determining the position of the electrode opposite the depression in the standard workpiece at a reference distance from the upper surface of the workpiece, said electrode and the surface of the depression in the standard piece being separated by a gap (12);

(c) determining an electrical parameter between the electrode and the standard workpiece in the presence of a fluid electrolyte material in said gap;

(d) locating the electrode opposite the depression at the reference distance from the upper surface of the raw workpiece, to thereby establish a relative position of the electrode and the raw workpiece, said electrode and depression in the workpiece being spaced from each other and separated by an operating gap (12);

(e) introducing a fluid electrolyte material in the gap, and filling said gap;

(f) applying a measurable and controllable electrical current through the opening gap by connecting a power source (G) to the workpiece (10) and the electrode (11), respec-

tively, to effect electrochemical removal of material from the depression in said raw workpiece, while maintaining the relative position of the electrode (11) with respect to the raw workpiece during said electrochemical removal step, whereby, upon workpiece removal due to electrochemical action, the operating gap will increase;

(g) measuring the same electrical parameter which was previously determined in step (c); and;

(h) controlling electrical current flow between the electrode and the raw workpiece and through the electrolyte material in said operating gap until the electrical parameter which is measured in step (g) has a value which corresponds to the electrical parameter which has been determined in step (c) with respect to the desired or standard volume of the depression in the standard workpiece.

4,475,996

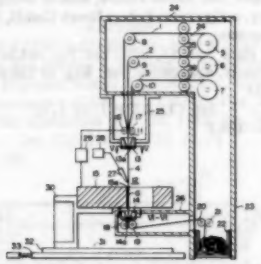
MULTI-STRAND WIRE ELECTROEROSION MACHINING METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 3, 1982, Ser. No. 354,440

Int. Cl.³ B23P *1/08, 1/02*

U.S. Cl. 204—129.46 **25 Claims**



1. A method of electroerosively machining an electrically conductive workpiece with a single elongate tool electrode in a cutting zone located between a pair of electrode guides and flushed with a machining fluid, the method comprising the steps of:

(a) dispensing a plurality of continuous, electrically conductive, elementary electrode wires from respective wire supply sources continuously to feed the multiple wires separately into a single, straight-line, wire-travel path defined between said electrode guides;

(b) assembling said separate, continuously traveling multiple elementary electrode wires in said path to bring them together into a substantially mutually abutting relationship along a length thereof across said cutting zone to form a unitary bundle of said multiple elementary electrode wires traversing said workpiece, said unitary bundle constituting said single elongate tool electrode;

(c) electrically connecting said traveling multiple wires to one pole of an electroerosion power supply and said workpiece to the other pole thereof to pass a machining current between said unitary bundle and said workpiece across a machining gap, thereby to erosively remove material from the workpiece in said fluid-flushed cutting zone;

(d) taking up said wires from said cutting zone for collection while holding the traveling multiple wires taut across the cutting zone; and

(e) displacing said workpiece relative to said multiple-wire bundle transversely to said straight-line wire-travel path to machine a contour in the workpiece.

4,475,997

PROCESS FOR PREPARING TRICHLOROACROLEIN

Junichi Saito, and Toyohiko Kume, both of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

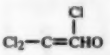
Division of Ser. No. 456,461, Jan. 7, 1983, Pat. No. 4,434,303, which is a division of Ser. No. 288,443, Jul. 30, 1981, Pat. No. 4,392,929, which is a division of Ser. No. 110,051, Jan. 7, 1980, Pat. No. 4,317,937. This application Nov. 30, 1983, Ser. No. 556,510

Claims priority, application Japan, Jan. 24, 1979, 54-6015

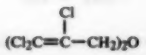
Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R **1 Claim**

1. A process for the production of trichloroacrolein of the formula



which comprises reacting bis-(2,3,3-trichloro-2-propenyl) ether of the formula



with bromine under irradiation with light, thereby to produce a reaction mass containing bis-(1-bromo-2,3,3-trichloro-2-propenyl)-ether and directly subjecting the reaction mass to steam distillation thereby to form and distill off trichloroacrolein.

4,475,998

MODIFIED EPOXY (METH) ACRYLATE RESIN AND HARDENABLE RESIN COMPOSITION CONTAINING THE SAME

Kiyoshi Okitsu, and Takaaki Murai, both of Hiroshima, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 22, 1983, Ser. No. 534,863

Claims priority, application Japan, Sep. 22, 1982, 57-165669; Sep. 28, 1982, 57-169180

Int. Cl.³ C08G *63/08, 59/40;* **C08F** *8/00*

U.S. Cl. 204—159.15 **14 Claims**

1. A lactone-modified epoxy acrylate resin, obtained by addition polymerizing 3 to 95 parts by weight of a lactone to 97 to 5 parts by weight of an epoxy acrylate resin at the whole or a part of the secondary hydroxy groups thereof.

11. A hardenable resin composition, comprising:

(A) 5 to 95 parts by weight of a lactone-modified epoxy acrylate resin, obtained by addition polymerizing 3 to 95 parts by weight of a lactone to 97 to 5 parts by weight of an epoxy acrylate resin at the whole or a part of the secondary hydroxy groups thereof;

(B) 95 to 5 parts by weight of a vinyl compound having an ethylenically unsaturated bond; and

(C) 0 to 10 parts by weight of a photosensitizer.

4,475,999

SENSITIZATION OF GLYOXYLATE PHOTOINITIATORS

Francis A. Via, Yorktown Heights, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 6, 1983, Ser. No. 501,468

Int. Cl.³ C08F *2/50*

U.S. Cl. 204—159.23 **16 Claims**

1. In the photopolymerization of monomeric and polymeric compositions of photopolymerizable substances wherein a photoinitiator is admixed with a photopolymerizable composition and the mixture is exposed to actinic radiation, the improvement wherein photopolymerization is effectively initiated by a glyoxylate photoinitiator in the presence of a cinnamyl ketone compound sensitizer for said photoinitiator.

4,476,000

METHOD OF MAKING A MAGNETIC FILM TARGET FOR SPUTTERING

Makoto Nagao; Akira Nahara, and Yoshihiro Arai, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Saitama, Japan

Filed Oct. 21, 1981, Ser. No. 313,286
Claims priority, application Japan, Oct. 28, 1980, 55-151206
Int. Cl.³ C23C 15/00
U.S. Cl. 204—192 M 10 Claims

1. A sputtering method comprising the steps of:

providing a magnetic film sputtering target characterized by forming a film of a magnetic material on a target substrate by ion-plating at least one of a plurality of raw magnetic materials onto said substrate;

establishing electric and magnetic fields adjacent a sputtering surface of said target where said fields are substantially perpendicular to one another and where a portion of said magnetic field extends through said sputtering target, said electric and magnetic fields confining plasma adjacent the sputtering surface of the target to effect sputtering thereof; and

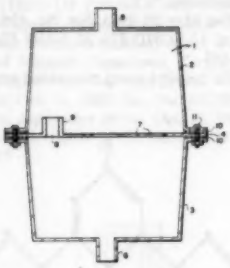
coating a further substrate with the sputtered target material.

4,476,001

DEVICE FOR COLLECTING ALKALINE CELL LIQUOR FROM AN ELECTROLYTIC CELL

J. Barrett McDonald, St. Albans, and Terry V. Fontalbert, Marmet, both of W. Va., assignors to Nova Rubber Co., South Charleston, W. Va. and FMC Corporation, Philadelphia, Pa., a part interest

Filed Mar. 30, 1983, Ser. No. 480,609
Int. Cl.³ C25B 15/08, 9/00
U.S. Cl. 204—228 13 Claims



2. Cell liquor collection device for attachment to a weak caustic liquor overflow line from a chlor-alkali electrolytic cell, which comprises,

(a) a closed container, having a cross sectional area substantially larger than that of the cell liquor overflow line and consisting of an upper section and a lower section which are releasably mated together;

(b) a vertically disposed inlet located in the upper container section and attached to the cell liquor overflow line from an electrolytic cell, through which the overflow cell liquor is introduced into the collection device;

(c) a vertically disposed outlet located in the lower container section, through which the cell liquor passes out of the collection device by gravity flow; said container and its inlet and outlet being fabricated from polymethylpentene plastic; and

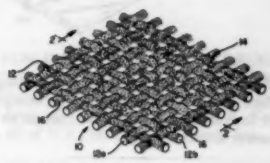
(d) a perforated plate, (i) substantially horizontally disposed within the container, extending across the horizontal cross section of the container and separating the upper container section from the lower container section, (ii) having perforations of sufficient size and number to provide for the expeditious passage of the incoming cell liquor stream through the plate as a multiplicity of streamlets or droplets or both, thereby promoting an interruption of current flow from the cell in the overflowing liquor stream, and (iii) being fabricated from a material that is resistant to hot, weak caustic cell liquor.

4,476,002

METAL CURRENT CARRIER FOR ELECTROCHEMICAL CELL ELECTRODES

Ronald A. Howard, Brook Park; Srinivasan Sarangapani, and Lawrence G. Edwards, both of Cleveland, all of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1982, Ser. No. 393,390
Int. Cl.³ C25B 11/03, 11/00; H01M 4/86
U.S. Cl. 204—283 35 Claims



1. A metal current carrier for use in fabricating thin electrochemical cell electrodes which carrier comprises: a thin metal screen having disposed on at least one side thereof a thin porous layer of coarse metal particles having a particle size of from about 4.1 to 5.8 mils, said metal particles at least partially filling the multiple openings in the metal screen and being sintered to themselves and also to the metal screen, said porous layer providing a rough textured, high surface area interface for cohesively bonding an active layer to the metal screen.

4,476,003

CHEMICAL ANCHORING OF ORGANIC CONDUCTING POLYMERS TO SEMICONDUCTING SURFACES

Arthur J. Frank, Lakewood, and Kenji Honda, Wheatridge, both of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 7, 1983, Ser. No. 483,040
Int. Cl.³ C25B 11/00
U.S. Cl. 204—290 R 25 Claims

1. A semiconductor electrode with a conductive polymeric coating attached to the surface thereof by means of a coupling reagent for effecting covalent attachment of said conductive polymeric coating to an oxide semiconductor electrode and coordinative attachment of said conductive polymeric coating to a non-oxide semiconductor electrode and for improving adhesion of the conductive polymeric coating to the surface of the semiconductor, wherein attachment of the coupling reagent to the electrode surface is a covalent or a coordinative chemical attachment.

4,476,004

APPARATUS FOR ELECTROFUSION OF BIOLOGICAL PARTICLES

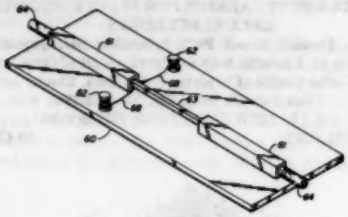
Herbert A. Pohl, Stillwater, Okla., assignor to D.E.P. Systems, Inc., Metamora, Mich.

Continuation of Ser. No. 483,290, Apr. 8, 1983, Pat. No. 4,441,972. This application Oct. 26, 1983, Ser. No. 545,751
Int. Cl.³ B01D 57/02
U.S. Cl. 204—299 R 4 Claims

1. A device for fusing neutral polarizable bodies comprising at least two optically transparent elongated tubular members affixed to an optically transparent plate, said members colinearly aligned and spaced apart from each other;

said members accommodating an optically transparent elon-

gated tubular cell, said cell having exterior circumferential dimensions adapted for accommodation by the interior circumferential dimensions of said members, and said cell being of sufficient length such that each end thereof, respectively, extends partially into the openings of said respective members;



two parallel electrodes longitudinally extending along the inner surface of said cell, said electrodes being electrically connected for switching to a direct current or alternating current power source.

4,476,005

UREASE-IMMOBILIZED UREA ELECTRODE AND PROCESS FOR PREPARING THE SAME

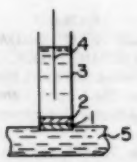
Daizo Tokinaga; Teruaki Kobayashi, both of Hachioji; Akiko Katori, Koganei, and Yoshiharu Karasawa, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,511

Claims priority, application Japan, Oct. 4, 1982, 57-173226

Int. Cl.³ G01N *27/30*; C12Q *1/00, 1/58*

U.S. Cl. 204—403 **9 Claims**



1. A urea electrode comprising a urease-immobilized membrane and an electrode for quantitative determination of ammonium ions, the urease-immobilized membrane having added amino groups in the membrane structure.

7. A method for preparing a urease-immobilized membrane having added amino groups in the membrane structure for a urea electrode, which comprises dipping a urease-immobilized membrane in an aqueous solution of a compound having at least two amino groups in one molecule.

4,476,006

SUPPORTS FOR LITHOGRAPHIC PRINTING PLATES AND PROCESS FOR PRODUCING THE SAME

Hisao Ohba; Kazutaka Oda; Hirokazu Sakaki; Akira Shirai, and Azusa Ohashi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 135,395, Mar. 31, 1980,. This application Sep. 7, 1982, Ser. No. 415,075

Claims priority, application Japan, Aug. 16, 1979, 54-104473

Int. Cl.³ C25D *11/16*; C25F *3/04, 3/14*

U.S. Cl. 204—17 **11 Claims**

1. A process for producing a support for a lithographic printing plate which comprises:

mechanically roughening the surface of an aluminum plate, chemically etching about 5 to 20 g/m² of aluminum from the surface of the plate, and

applying an alternating wave-form electric current to the plate in an acidic aqueous solution such that the quantity of electricity generated with the plate as the anode is equal to or greater than the quantity of electricity generated with the plate as the cathode, electrolysis being carried

out such that the current density when the plate is the anode is not less than about 20 A/dm² and the quantity of electricity generated with the plate as the anode is about 200 coulombs/dm² or less.

4,476,007

HEMISPHERANDS AND SODIUM-SELECTIVE COMPOSITIONS AND ELECTRODES CONTAINING SAME

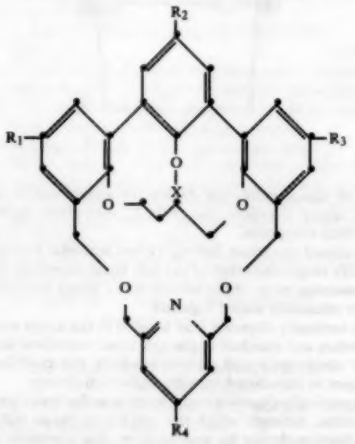
John L. Toner, Webster; Daniel S. Daniel, and Susan M. Geer, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 20, 1983, Ser. No. 496,740

Int. Cl.³ C07D *273/01*; G01N *27/30*

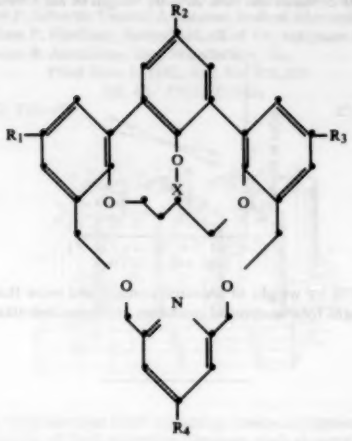
U.S. Cl. 204—417 **25 Claims**

1. A lipophilic hemispherand compound represented by the structure:



wherein R_1, R_2, R_3 and R_4 are independently hydrogen, alkyl, alkenyl, cycloalkyl, aryl or a heterocyclic group; and X is benzyl or an electron donating group capable of forming at least one coordinating site for sodium ions.

12. A sodium ion-selective electrode having an ion selective membrane composition comprising an ionophore which is a lipophilic hemispherand compound represented by the structure:



wherein R_1, R_2, R_3 and R_4 are independently hydrogen, alkyl, alkenyl, cycloalkyl, aryl or a heterocyclic group; and X is benzyl or an electron donating group capable of forming at least one coordinating site for sodium ions, a compound capable of solvating said hemispherand and a supporting matrix.

4,476,008

OXYGEN CONCENTRATION-SENSING DEVICE AND THE METHOD OF PRODUCING THE SAME

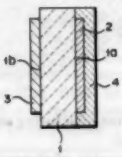
Hiromi Sano, Nagoya; Masatoshi Suzuki, Anjo; Masaya Fujimoto, Oobu; Masahiro Shibata, Aichi; Toshitaka Saito, Toyohashi, and Mitihiro Yamakawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Japan

Filed Oct. 11, 1983, Ser. No. 541,001

Claims priority, application Japan, Oct. 12, 1982, 57-178643

Int. Cl.³ G01N *27/58*; B05D *1/12*

U.S. Cl. 204—425 **14 Claims**



1. An oxygen gas concentration-sensing device which comprises:

a solid electrolyte body which is prepared from an oxygen ion-permeable metal oxide and whose first surface is exposed to a gas to be sensed and whose second surface is exposed to a reference gas;

a first porous electrode fixed to the first surface of the solid electrolyte body;

a second porous electrode fixed to the second surface of the solid electrolyte body;

a gas diffusion-resisting layer which is prepared from a porous metal oxide to cover the first electrode and has an average pore-size ranging between 300 Å and 400 Å; and

means for impressing prescribed voltage across the first and second electrodes.

14. A method of forming a gas diffusion-resisting layer for an oxygen gas concentration-sensing device of the type including a solid electrolyte body which is prepared from an oxygen ion-permeable metal oxide and whose first surface is exposed to a gas to be sensed and whose second surface is exposed to a reference gas, a first porous electrode fixed to the first surface of the solid electrolyte body and a second porous electrode fixed to the second surface of the solid electrolyte body which method comprises plasma spraying a mixture of Al_2O_3 powder and 1–4% by weight of SiO_2 powder on the electrode on the first surface of the solid electrolyte body to produce a porous gas diffusion-resisting layer and heating the gas diffusion-resisting layer to a temperature ranging between 1,300° C. and 1,400° C., thereby reducing the average pore-size to a level ranging between 300° Å and 400° Å.

4,476,009

PROCESS FOR IMPROVING THE HYDROGEN DONOR PROPERTIES OF A COAL LIQUEFACTION SOLVENT

Erven J. Kuhlmann, Wappingers Falls; Richard P. Guptill; Dick Y. Jung, both of Fishkill, and Hyung K. Zang, Hopewell Junction, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 24, 1983, Ser. No. 478,196

Int. Cl.³ C10G *1/00, 1/06, 45/00*

U.S. Cl. 208—8 LE **5 Claims**

1. A process for improving the hydrogen donor properties of a coal liquefaction solvent for a coal liquefaction process which comprises separating a coal liquefaction solvent having a boiling range from about 350° to 1000° F. into a first fraction boiling in the range from about 350° to about 675° F. and a second fraction boiling in the range from about 675° F. to about 1000° F., hydrogenating said first fraction at a temperature ranging from about 700° to about 800° F. under a pressure of about 500 to 2500 psig, hydrogenating said second fraction at a temperature ranging from about 600° to 700° F. at a pressure from about 500 to 2500 psig and combining said hydrogenated first and second fractions to provide a coal liquefaction solvent having an increased concentration of hydrogen donor components.

4,476,010

CATALYTIC WATER WASH

Raymond S. Bouk, deceased, late of North Hollywood, Calif. (by Barbara Bouk, administratrix), assignor to Biolex Corporation, Los Angeles, Calif.

Continuation of Ser. No. 430,652, Jan. 3, 1974, , which is a continuation-in-part of Ser. No. 196,842, Nov. 8, 1971, , which is a continuation-in-part of Ser. No. 769,722, Oct. 22, 1968, abandoned. This application Oct. 18, 1979, Ser. No. 86,242

Int. Cl.³ C10G *19/02, 27/00, 29/12*

U.S. Cl. 208—15 **5 Claims**

1. The product produced by a process of eliminating impurities including viable forms of microbial contamination and preventing microbial recontamination in liquid hydrocarbons, comprising treating said hydrocarbons with an aqueous solution comprising an oxidizing compound and a mixture of metallic salts in which a first salt contains a metal ion selected from groups IB, IVa and Va of the periodic table and a second salt contains a metal ion selected from groups Ia, IIa and VIII of the periodic table, said aqueous solution reacting with and causing separation of said impurities from the liquid hydrocarbon into the aqueous solution, and subsequently removing said aqueous solution containing said impurities from the treated liquid hydrocarbon.

4,476,011

CATALYST AND PROCESS FOR THE HYDROGENITROGENATION AND HYDROCRACKING OF HIGH-NITROGEN FEEDS

A. Martin Tait; Thomas D. Nevitt, both of Naperville, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 200,536, Oct. 24, 1980,. This application Apr. 19, 1982, Ser. No. 369,844

Int. Cl.³ C10G *47/16, 47/20*

U.S. Cl. 208—111 37 Claims

1. A process for the hydrodenitrogenation and hydrocracking of a hydrocarbon stream containing a substantial amount of nitrogen compounds, which process comprises contacting said stream in a reaction zone under hydrodenitrogenation and hydrocracking conditions and in the presence of hydrogen with a catalyst comprising a hydrogenation component comprising chromium, molybdenum, and at least one Group VIII metal, a crystalline molecular sieve zeolite selected from the group consisting of ZSM crystalline aluminosilicate and AMS crystalline metallosilicate and containing exchangeable cations, and a porous refractory inorganic oxide, the metals of said hydrogenation component being present in the elemental form as oxides, as sulfides, or mixtures thereof, said stream being selected from the group consisting of petroleum hydrocarbon distillates, liquids derived from coal, liquids derived from tar sands, and whole shale oil or any fraction of shale oil.

4,476,012

PROCESS FOR DEASHING PRIMARY COAL LIQUIDS

John G. Gatsis, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 259,295, Apr. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 89,838, Oct. 31, 1979, abandoned. This application Oct. 6, 1982, Ser. No. 433,176

Int. Cl.³ C10G *1/04, 21/00*

U.S. Cl. 208—251 R 6 Claims

1. A process for the production of deashed coal liquid which comprises the sequential steps of:

(a) admixing a primary coal liquid containing ash and a hydrocarbon deashing solvent having no hydrogen-transferring ability at a selected admixing temperature from about 250° F. to about 575° F.;

(b) reducing the temperature before deashing of the entire resulting admixture of said primary coal liquid and hydrocarbon deashing solvent to a deashing temperature about 50° F. to about 125° F. less than said admixing temperature of step (a);

(c) deashing said primary coal liquid with said deashing solvent at said deashing temperature of step (b).

4,476,013

FROTH FLOTATION

David J. A. McCaffrey, Cheltenham, England, assignor to Coal Industry (Patents) Limited, London, England

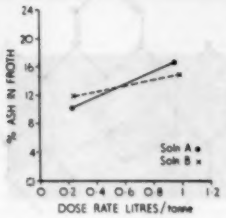
Filed Dec. 7, 1982, Ser. No. 447,714

Claims priority, application United Kingdom, Dec. 18, 1981, 8138285

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—166 5 Claims

1. In the method of froth flotation of coking coal using a collector, the improvement comprising the use as the collector an oil distillate cut within the range 150° to 190° C., which distillate contains less than 20% by weight of naphthenes, less



than 20% by weight of aromatic content and more than 60% by weight total content of n-alkanes and branched-alkanes.

4,476,014

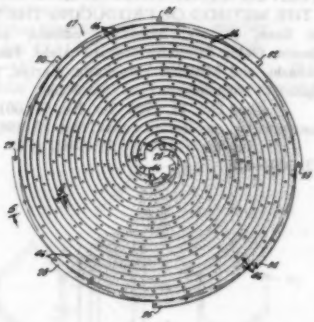
METHOD OF MAKING AN ORE CONCENTRATOR, AND CONCENTRATOR THUS MADE

Keith B. Cleland, 4460 Park Newport, Newport Beach, Calif. 92660

Filed Nov. 19, 1981, Ser. No. 323,171

Int. Cl.³ B03B *5/52*

U.S. Cl. 209—434 15 Claims



1. In a method of manufacturing an ore-concentrating pad or the like, the steps of:

(a) providing a plurality of elongated flexible strips of predetermined cross-sectional shape,

said shape being such that grooves will be formed by said strips when said strips are adjacent and parallel to each other,

(b) anchoring inner end portions of said strips to an elastomeric support at predetermined locations in a generally circular configuration, while leaving remaining portions of said strips free to move in directions generally parallel to said support,

(c) thereafter moving each of said strips into continuous spiraling engagement with the adjacent strip,

(d) progressively securing said strips to said support by means of flexible adhesive so that they remain in said continuous engagement, and

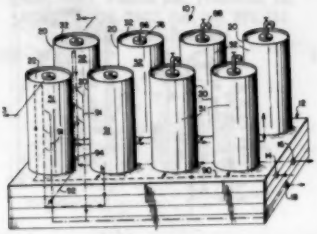
(e) effecting fluid pressure deformation of said strips and support and into conformity with the concave surface of a relatively rigid, upwardly concave element, and securing said support to said element.

4,476,015

MULTIPLE ELEMENT FLUID SEPARATION DEVICE

Richard P. Schmitt; Vincent J. Ciccone, both of Alexandria, and William P. Gardiner, Springfield, all of Va., assignors to V. J. Ciccone & Associates, Inc., Woodbridge, Va.

Filed Nov. 2, 1982, Ser. No. 438,579
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—93 23 Claims



1. A multi-element fluid separation device comprising:

a plurality of fluid separation elements, each element having a treatable fluid inlet end with a treatable fluid inlet, a treatable fluid chamber, a product fluid chamber, and an outlet end having a product fluid outlet connected to said product fluid chamber, and a concentrated fluid outlet connected to said treatable fluid chamber, said elements being divided into at least first and second stages, each stage containing a plurality of elements;

pressure vessel means surrounding said elements to maintain said elements at an elevated pressure, said pressure vessel means including at least one pressure vessel having first and second ends;

manifold means attached to each of said elements only at said outlet end of each of said elements, said manifold means being connected to said pressure vessel only at one end of said pressure vessel, and having a first channel formed therein for connecting the concentrated fluid outlet of each of the elements of the first stage with the treatable fluid inlet of each of the elements of the second stage;

fluid inlet means for supplying pressurized treatable fluid to the treatable fluid inlet of each of the elements of the first stage;

whereby the elements of the first stage are connected in parallel relationship to each other to receive treatable fluid and discharge concentrated fluid and product fluid, the first stage is connected to the second stage in series to transfer the concentrated fluid to the second stage through the manifold, and the second stage elements are connected in parallel to each other.

4,476,016

HEART ATTACK SCREENING METHOD, APPARATUS AND KIT FOR SAME

John Y. Kiyasu, 94 Meadow St., Garden City, N.Y. 11530

Continuation of Ser. No. 177,669, Aug. 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 922,885, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 730,102, Oct. 6, 1976, Pat. No. 4,105,499. This application Mar. 23, 1982, Ser. No. 360,951
Int. Cl.³ B01N *15/08*
U.S. Cl. 210—198.2 3 Claims

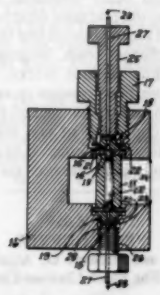
1. A packed glass column having a packing consisting essentially of DEAE-dextran and especially adapted for open system chromatographic isolation of the creatine phospholinase-MB fraction in the serum of human patients, said column having a cellulosic cigarette filter tip consisting essentially of linearly milled cellulose containing fiber positioned in the lower tip portion of said column, said tip shielded by a plug of material selected from the group consisting of sea sand, glass beads and DEAE-glycophase glass beads and mixtures thereof and having a column spigot in the eluent collection tube, having as a special feature, multiple air vent slits incorporated throughout the length of the shaft of said spigot thereby allowing open system chromatography.

4,476,017

REMOVABLE SYNTHESIS COLUMN

Daniel H. Scharff, Mountain View, and Lev J. Leytes, Palo Alto, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 3, 1983, Ser. No. 500,661
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—94 9 Claims



1. A synthesis column assembly for use in a DNA synthesis instrument, comprising:

(a) a tube defining a passage extending the length of said tube, said tube terminating in a first end and a second end;

(b) first and second filtering means for filtering a liquid flowing through said tube, each filtering means having one end extending into and being frictionally held by a respective end of the passage;

(c) first and second sealing means for sealing the ends of the tube to the DNA synthesis instrument, each sealing means defining an opening for receiving the other end of a respective filtering means;

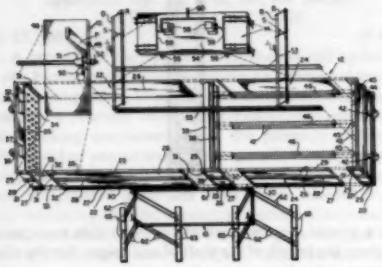
(d) whereby each sealing means is held against the respective end of the tube by the respective filtering means.

4,476,018

FIELD ASSEMBLED CLARIFIER

Harold R. White, New Lenox, and Alex J. Doncer, Jr., Palos Heights, both of Ill., assignors to Alar Engineering Corporation, Mokena, Ill.

Filed Mar. 14, 1983, Ser. No. 475,190
Int. Cl.³ B01D 21/10
U.S. Cl. 210—232 6 Claims



1. A knocked-down clarifier composed of sub-assemblies and components sized and shaped to be transportable on a conventional over the road truck for assembly on top of a peripherally rimmed concrete basin at the use site which comprises a tank extension frame composed of an inlet end section, an intermediate oil collection section, an outlet end section, sidewall sections joining the inlet section to the intermediate section and the intermediate section to the outlet end section, end plates on said sections positioned to be interfaced and bolted together to form an upstanding open top and open bottom peripheral frame sized to rest on the peripheral rim of the basin to extend the height and increase the volume of the basin, fasteners securing the bolted together peripheral frame to said rim, cross beams joining the sidewalls at spaced intervals, a transverse channel beam on said intermediate section, a transverse overflow trough on said intermediate section, in front of said channel beam individual transversely spaced longitudinal weirs having rear ends detachably mounted on the top of said outlet end section behind said trough, and front ends supported on said channel beam, longitudinal tracks on said frame, a bridge riding on said tracks, a service platform mounted on said frame, power means on said platform reciprocating said bridge on said tracks, suction pumps with inlets on said bridge, piping connected to said inlets depending from said bridge, and suction heads coupled to and suspended from said piping to ride over the bottom of the basin.

4,476,019

PELLET DRYER

Heinz K. Nowisch, and Richard O. Alguire, both of Fulton, N.Y., assignors to The Black Clawson Company, Middletown, Ohio

Filed Mar. 16, 1983, Ser. No. 475,815
Int. Cl.³ B01D 29/10
U.S. Cl. 210—232 3 Claims

1. In a rotating pellet dryer for removing plastic pellets from entraining water and drying the same including a rotor housing and a rotor in the housing mounted on a generally vertical axis for lifting the pellets from a housing inlet upwardly while imparting rotational and outward movement therefrom with extraction of water through a generally cylindrical screen surrounding the rotor, the improvement comprising:

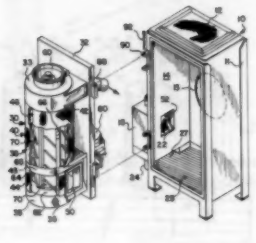
an enclosing cabinet normally totally surrounding the rotor having a door formed as one wall thereof,

upper and lower spaced apart rotor housing support means mounted on said door,

said rotor being rotatably supported on said door between said upper and lower housing support means with said cylindrical screen means extending between said support means,

rotor drive motor means carried on said door at a side thereof opposite said support means,

said cabinet having pellet inlet means in alignment with said housing inlet when said door is closed for delivering pellets to said rotor,



means on said door defining pellet outlet means connecting to said upper housing support means and extending outwardly through said door,

means for draining water from said cabinet, and

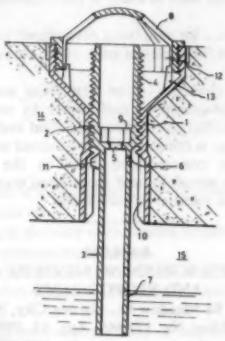
said door being pivotally mounted to said cabinet for movement outwardly therefrom for exposing said rotor housing and the interior of said cabinet for cleaning and maintenance.

4,476,020

STRAINER ASSEMBLY FOR GRANULAR MEDIA FILTERS

John H. Cheetham, Twickenham, England, assignor to Paterson Candy International Limited, Laverstoke Mill, England

Filed Nov. 2, 1982, Ser. No. 438,711
Claims priority, application United Kingdom, Dec. 8, 1981, 8136963
Int. Cl.³ B01D 23/20
U.S. Cl. 210—289 8 Claims



1. A strainer assembly for a granular media filter, comprising:

a body for being mounted in a floor of said filter and having open upper and lower ends;

a hollow open ended stem mounted in said body and projecting outwardly of said body below said lower end of said body;

a strainer top cap fitted to said upper end of said body;

means whereby the vertical position of said stem can be adjusted relative to said body, said adjustment means comprising interengaging screw-threads on the inner wall of said body and the outer wall of said stem; and

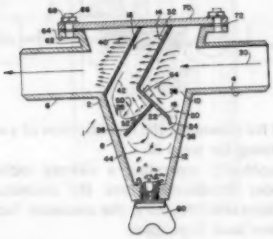
means whereby unintentional relative rotation of said stem and said body is prevented, said rotation preventing means comprising a flexible tab on said outer wall of said stem and a plurality of ribs engageable by said tab on said inner wall of said body.

4,476,021

RUST, SCALE AND FOREIGN PARTICLE ARRESTER

Alexander Souza, 689-C Puuloa Rd., Honolulu, Hi.

Filed Jun. 22, 1982, Ser. No. 391,021
Int. Cl.³ B01D *29/36*
U.S. Cl. 210—307 **11 Claims**



1. Rust and scale arrester apparatus for installing in a circulating cooling system for internal combustion engines comprising a fluid inlet and a fluid outlet, a separation chamber positioned between the fluid inlet and the fluid outlet, a collection chamber connected below the separation chamber in fluid communication therewith, deflecting filter means disposed in the separation chamber between the fluid inlet and the fluid outlet for separating solids from the fluid flowing through the separation chamber from the inlet to the outlet and baffle means mounted in the separation chamber and in the collection chamber for directing flow of fluid through the separation chamber and through the collection chamber to promote removal of solid particles from the deflecting filter means and to flow solid particles from the deflecting filter means into the collection chamber, and emptying means connected to the collection chamber for emptying solid particles in the collection chamber, the baffle means extending rearward in the direction of the fluid inlet and downward in the direction of the collection chamber from the filter means, a portion of the baffle means extending forward in the direction of the outlet and downward from a downward and rearward extending portion of the baffle means, and the downward and forward extending portion of the baffle means having openings therein for permitting upward flow of fluid from the collection chamber toward the separation chamber.

4,476,022

SPIRALLY WRAPPED REVERSE OSMOSIS MEMBRANE CELL

David W. Doll, 6138 Tamilyn St., San Diego, Calif. 92122

Filed Mar. 11, 1983, Ser. No. 474,567
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—21.5 **18 Claims**

1. A spirally wound module for use in separating a permeate from a fluid feed mixture comprising:

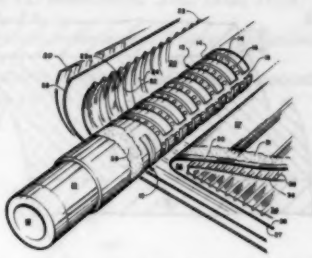
a product tube serrated along its outer surface, the bottom surface of the serrations having a plurality of spaced apart apertures for communicating between said bottom surface and the interior thereof;

a highly porous product spacing means having protrusions along one surface thereof;

a permselective membrane;

said product spacing means and said membrane are folded over said product tube whereby said protrusions are positioned on the side of said product spacing means opposite said product tube serrations; said product spacing means overlaps said serrations and said membrane sandwiches adjacent layers of said product spacing means therebetween, the edges and free outer ends of the membrane layer and highly porous spacing means are sealed together; and

first and second highly porous brine spacing means having channels on one surface thereof parallel to the axis of said



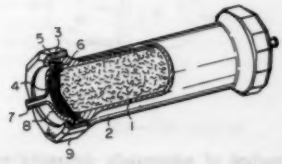
product tube, the brine spacing means sandwich at least a portion of the folded layers of membrane and product spacing means therebetween, whereby when the membrane, product spacing means and brine spacing means are wound about the product tube at lease some layers of product spacing means and membrane have first and second brine spacing means therebetween and the channels of said first and second brine spacing means are opposing.

4,476,023

GRANULOCYTE-SEPARATING MATERIAL AND GRANULOCYTE SEPARATOR

Katsunori Horikoshi, and Tsutomu Abe, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 239,259, Mar. 2, 1981, Pat. No. 4,370,381. This application Sep. 27, 1982, Ser. No. 425,039
Claims priority, application Japan, Mar. 12, 1980, 55-30247; Mar. 12, 1980, 55-30248
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—446 **1 Claim**



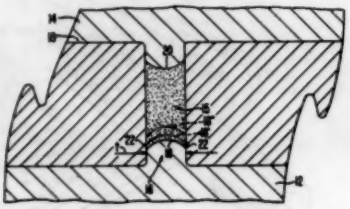
1. A granulocyte collector comprising a granulocyte-separating material packed in a vessel having a blood cell suspension introduction inlet and a blood cell suspension discharge outlet; said granulocyte-separating material comprising a carrier comprised of a fiber having a diameter of from 10 to 50 microns and packed in the vessel at a packing density of from 0.05 to 0.20 g/cm³ and having supported thereon a fatty acid derivative containing a fatty acid moiety having 10 to 22 carbon atoms.

4,476,024

METHOD AND APPARATUS FOR DISTILLATION

Dah Y. Cheng, Los Altos Hills, Calif., assignor to International Power Technology, Inc., Palo Alto, Calif.

Continuation of Ser. No. 226,050, Jan. 19, 1981, abandoned, which is a division of Ser. No. 12,047, Feb. 14, 1979, Pat. No. 4,265,713. This application Aug. 9, 1982, Ser. No. 406,481
Int. Cl.³ B01D 13/00
U.S. Cl. 210—500.2 12 Claims



1. Distillation apparatus for distilling aqueous solutions comprising:

a thin microporous hydrophobic layer separating an aqueous distilland from a fresh water distillate;

means for providing a vapor pressure gradient across said hydrophobic layer with the distilland being at a higher vapor pressure than the distillate so that liquid water evaporates on the distilland side of the pores of the hydrophobic layer and condenses as pure water on the distillate side of the hydrophobic layer; and

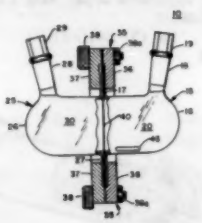
means for preventing waterlogging of the hydrophobic layer comprising a hydrophilic layer on the distilland side of the hydrophobic layer.

4,476,025

SEPARATION OF CERTAIN CARBOXYLIC ACIDS UTILIZING CATION EXCHANGE MEMBRANES

Helena L. Chum, Arvada, Colo., and David W. Sopher, Maarssenbroek, Netherlands, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 9, 1983, Ser. No. 492,925
Int. Cl.³ B01D 13/00
U.S. Cl. 210—638 19 Claims



1. A method of substantially separating monofunctional lower carboxylic acids consisting essentially of from 1 to 5 carbon atoms from a liquid mixture containing said acids, said method comprising the steps of:

(a) contacting one side of a perfluorinated ionomer membrane;

(b) maintaining a pH of said mixture acid; and

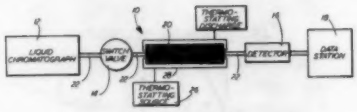
(c) establishing a pressure gradient across said membrane of less than about 5 psi, whereby said monofunctional lower carboxylic acids pass through said membrane at a substantially faster rate than a remainder of said mixture thereby substantially separating said monofunctional lower carboxylic acids from said mixture.

4,476,026

APPARATUS USEFUL IN IDENTIFYING A SOLUTE

Elena Katz, Westport; Kenneth L. Ogan, Bethel, and Raymond P. W. Scott, Ridgefield, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 21, 1983, Ser. No. 477,577
Int. Cl.³ B01D 15/08
U.S. Cl. 210—656 1 Claim



1. A method for enhancing the identification of a solute; said method comprising the steps of:

chromatographically separating a mixture including said solute under conditions where the resistance-to-mass transfer dispersion process is the dominant factor in the total column band dispersion;

determining the dispersion of the resultant chromatographic peak; and

determining the molecular weight of said solute from a first order relationship between said dispersion and said molecular weight whereby solute identification is enhanced.

4,476,027

USE OF MAGNETIC SEPARATION IN SCAVENGING HYDROGEN SULFIDE

Irwin Fox, Ballwin, Mo., assignor to Alvin Samuels, New Orleans, La. and David Samuels, St. Louis, Mo., part interest to each

Continuation-in-part of Ser. No. 221,897, Dec. 31, 1980, Pat. No. 4,344,842. This application Aug. 9, 1982, Ser. No. 406,297
Int. Cl.³ B01D 15/00; C09K 7/04
U.S. Cl. 210—695 2 Claims

1. In scavenging hydrogen sulfide from a hydrogen sulfide contaminated liquid, the process of

suspending in a hydrogen sulfide contaminated liquid a quantity of ferri-magnetic iron oxide particles of the type which react with hydrogen sulfide to form a substantially non-magnetic environmentally safe particulate product of reaction,

said quantity being in excess over that required for the reaction of such hydrogen sulfide,

contacting and reacting the hydrogen sulfide with the said iron oxide particles and thereby forming such non-magnetic environmentally safe particulate product of reaction, the excess iron oxide particles remaining substantially unreacted and retaining their ferri-magnetic characteristic, then

(A) passing the liquid containing the particulate matter comprising the excess unreacted ferri-magnetic iron oxide particles, particulate product of reaction and any other solids, through a magnetic separator, and, by it, separating and recovering therefrom substantially all or at least the greater portion of the said unreacted iron oxide particles,

(B) separating out from the liquid such non-magnetic particulate product of reaction, along with any solids present, whereby to dispose of same without hazard to the environment,

(C) recovering the purified liquid and

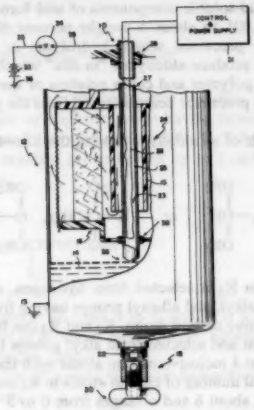
(D) returning the unreacted iron oxide particulates to the contaminated liquid treatment step.

4,476,028

HEATER AND WATER PROBE

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed Apr. 25, 1983, Ser. No. 487,974
Int. Cl.³ B01D 35/18
U.S. Cl. 210—774 7 Claims



6. In a water separator including means defining an inlet and an outlet and means for separating water from fuel passing therethrough, a probe for insertion into the water separator, the probe comprising a sheath of electrically conductive material, a fluid treatment means situated within the sheath for heating a fluid outside the sheath, means for electrically insulating the sheath, and means for electrically connecting the sheath to an external indicator for indicating the level of water within the separator.

7. In a fuel-water separator having a housing and a heating element disposed within the housing, a method for detecting the presence of accumulated water within the housing, comprising the steps of enclosing the heating element within an electrically conductive sheath, grounding the housing, applying a specified voltage between the conductive sheath and the grounded housing from a voltage source, allowing accumulated water within the housing to contact the sheath at a specified depth, and interposing an indicator between the voltage source and the conductive sheath such that an accumulation of water above the specified depth will activate the indicator.

4,476,029

HIGH TEMPERATURE DISPERSANT

Anita O. Sy, Columbia, Md., and Dionisio G. Cuisia, Chicago, Ill., assignors to W. R. Grace & Co., New York, N.Y. and Dearborn Chemical Co., Chicago, Ill.

Filed May 26, 1982, Ser. No. 382,164
Int. Cl.³ C09K 7/02
U.S. Cl. 252—8.5 C 7 Claims

1. In a water-based bentonite clay drilling fluid containing a waterloss controller, a weighting agent, and a dispersant, the improvement wherein the dispersant is a high temperature dispersant comprising a polyacrylic acid having a molecular weight of from about 4,000 to about 8,000.

4,476,030

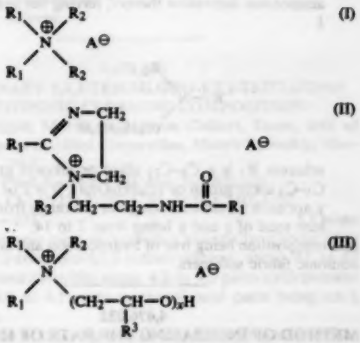
CONCENTRATED SOFTENER MASTERBATCHES

Adolf May, Hofheim am Taunus; Hans-Walter Bücking, Kelkheim, and Manfred Schreiber, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,305
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150179
Int. Cl.³ D06M 13/16, 13/02, 13/20, 13/38
U.S. Cl. 252—8.8 4 Claims

1. Concentrated masterbatches of fabric softeners consisting substantially of

(a) from 20 to 70 weight % of one or more compounds of the formulae I to III,



(I)

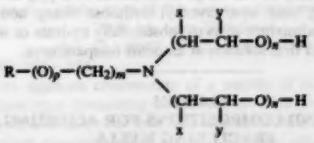
(II)

(III)

in which R_1 is alkyl or alkenyl having from 8 to 22, carbon atoms, R_2 is alkyl having from 1 to 4 carbon atoms, R_3 is methyl or hydrogen, x is a number of from 1 to 5 and A is an anion,

(b) from 20 to 60 weight % of a paraffin, a fatty alcohol, a fatty acid, a fatty acid -C_1-C_{13}-alkyl ester, each having from 8 to 22, carbon atoms, a polyethyleneglycol having a molecular weight of from 200 to 600, an alkyl ester having from 8 to 22 carbon atoms of a polyethyleneglycol having a molecular weight of from 200 to 600 or a polypropyleneglycol having a molecular weight of from 200 to 1,000 or mixtures thereof,

(c) from 5 to 25 weight % of an amino-oxethylate of the formula



(IV)

in which R_1 is alkyl or alkenyl having from 8 to 22 carbon atoms, x and y are hydrogen or methyl, with the proviso that x and y are not simultaneously methyl, n is an integer of from 2 to 40, p is a number of from zero to 1, and m is a number of from zero to 3, with the provision that in case of p being 1 m is 1-3, and water up to 100%.

4,476,031
TEXTILE TREATMENT COMPOSITIONS

Julius Ooms, Langdorp, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 338,950, Jan. 12, 1982, Pat. No. 4,439,330. This application Oct. 7, 1983, Ser. No. 539,862

Claims priority, application United Kingdom, Jan. 16, 1981, 8101358

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

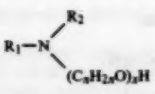
Int. Cl.³ D06M *13/46, 13/18*

U.S. Cl. 252—8.8 **2 Claims**

1. An aqueous textile treatment composition comprising:

(a) from 12.3% to 25% by weight of substantially water-insoluble fabric softener selected from the group consisting of cationic fabric softeners and mixtures thereof with substantially water-insoluble nonionic fabric softeners in a weight ratio of cationic softener:nonionic softener of at least 2.5:1, and

(b) from 0.1% to 3% by weight of alkoxylated amine, or ammonium derivative thereof, having the general formula I



I

wherein R_1 is a C_8–C_{22} alkyl or alkenyl group, R_2 is a C_1–C_4 alkyl group or $(C_xH_{2x}O)_yH$, n is 2 or 3, and x and y are each a number average in the range from 0 to 14, the sum total of x and y being from 2 to 14;

said composition being free of hydrocarbon and fatty acid ester nonionic fabric softeners.

4,476,032
METHOD OF INCREASING THE RATE OF HYDRATION OF ACTIVATED HYDROETHYL CELLULOSE COMPOSITIONS

Roy F. House, Houston, and Lonnie D. Hoover, Chappell Hill, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed May 8, 1981, Ser. No. 262,026

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.³ C09K *7/02*; E21B *43/00*

U.S. Cl. 252—8.55 R **7 Claims**

1. In a method of producing a well servicing fluid wherein a first solution containing zinc bromide is mixed with at least one second solution having dissolved therein a salt selected from the group consisting of calcium chloride, calcium bromide, and mixtures thereof, the improvement which comprises the following steps in the order indicated:

(a) admixing a hydroxyethyl cellulose composition with said first solution containing at least 30% by weight zinc bromide to produce a viscosified solution and

(b) thereafter mixing said viscosified solution with said second solution to give the desired well servicing fluid having a density in the range from about 14.2 ppg to about 18.0 ppg, said hydroxyethyl cellulose being activated prior to admixture so as to substantially hydrate or solubilize in said first solution at ambient temperatures.

4,476,033
METHOD AND COMPOSITIONS FOR ACIDIZING AND FRACTURING WELLS

Charles B. Josephson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1982, Ser. No. 403,373

Int. Cl.³ E21B *43/27*

U.S. Cl. 252—8.55 C **15 Claims**

1. A gelable acidic composition, suitable for matrix-acidizing or fracture-acidizing of a porous subterranean formation susceptible of attack by an acid and which gels upon injection into a subterranean formation, comprising:

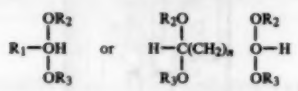
(a) water;

(b) a water-thickening amount ranging from 0.2 to about 3 weight percent of a water-dispersible acrylamide-derived polymer;

(c) from 0.4 to about 60 weight percent of a non-oxidizing acid which is capable of reacting with a significant amount of the acid-soluble components of said formation; and

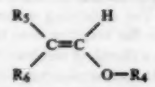
(d) from 0.001 to about 5 weight percent of at least one aldehyde precursor which hydrolyzes in aqueous acid media to produce aldehydes "in situ" which in turn react with the polymer and cause gelation of the mixture, said aldehyde precursor being selected from the group consisting of

(1) acetals of an aldehyde having the formula



wherein R_1 is selected from hydrogen, alkyl, aralkyl, alkoxyalkyl, and alkenyl groups having from 1 to about 8 inclusive carbon atoms, R_2 and R_3 can be the same or different and selected from alkyl groups having from 1 to about 4 inclusive carbon atoms with the proviso that the total number of carbon atoms in R_2 and R_3 does not exceed about 6 and n ranges from 0 to 3

(2) enol esters having the formula



wherein R_4 is an acyl radical containing 2 to 4 carbon atoms and R_5 and R_6 are hydrogen or alkyl radicals containing 1 to 3 carbon atoms with the proviso that the total number of carbon atoms does not exceed 10

(3) reducing sugars selected from monosaccharide aldoses and disaccharides containing hemiacetal linkages

(4) acetals or polyvinyl alcohols or an acetal of 1,2- or 1,3-diols containing 3 to 6 carbon atoms, and

(5) cyanoacetal having the formula

wherein R_1 represents cyanoalkyl groupings containing 3 to 7 carbon atoms, and R_2 and R_3 can be the same or different and are selected from alkyl groups having from 1 to about 4, inclusive, carboon atoms with the proviso that the total number of carbon atoms in R_2 and R_3 does not exceed about 6.

4,476,034
EMULSIFIERS FOR METAL PROCESSING OILS

Bernhard Mees, Eppstein, and Horst Lorke, Liederbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 21, 1982, Ser. No. 390,338

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125297

Int. Cl.³ B01F *17/00, 17/26, 17/42*; C01M *1/06*

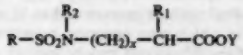
U.S. Cl. 252—49.5 **3 Claims**

1. An emulsifier for an emulsifiable metal process oil which consists essentially of:

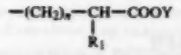
(A) about 30 to 50 weight % of a mixture of chloroparaffin

and secondary chloralkane sulfonate having a chain length of 12 to 17 carbon atoms each in a ratio of 55:45 and a chlorination degree of from 1.25 to 5 mols of chlorine per mol of the mixture,

(B) about 15 to 30 weight % of a compound of the formula

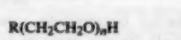


in which R is an alkylaromatic, cycloaliphatic, alkylcycloaliphatic or aliphatic group having from 12 to 24 carbon atoms, R_1 is hydrogen or CH_3, R_2 is hydrogen or an alkyl or oxyalkyl group having up to 3 carbon atoms, or the group



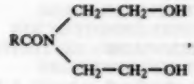
x is an integer of from 0 to 9, and Y is hydrogen or an equivalent of an alkali metal cation, alkanolamine cation or morpholine cation,

(C) about 12 to 20 weight % of a surface-active compound of the formula

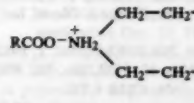


in which n is an integer of from 3 to 12 and R is C_{10}–C_{22}-alkanoyloxy or -alkenoyloxy, C_8–C_{22}-alkoxy or -alkenoxy, C_6–C_{16}-alkylphenyl or -alkylnaphthyl, or mono-, di- or tri-C_8–C_{22}-alkyl- or -alkenylamine;

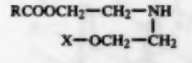
(D) about 15 to 25 weight % of a mixture consisting substantially of about 40 to 70 weight % of a compound of the formula



an amount of about 10 to 50 weight % of a compound of the formula



and an amount of about 10 to 20 weight % of a compound of the formula



in which formulae R is alkyl or alkenyl having from 12 to 20 carbon atoms, and X is hydrogen or —OCR.

3. A metal processing oil comprising a mixture containing the emulsifier of claim 3 and mixed basic or paraffin basic mineral oils, said mixture having been diluted with water in a ratio of from 1:20 to 1:100, the amount of said emulsifier in said mixture, prior to dilution with water, being 15 to 60% by weight.

4,476,035

MAGNETIC COATING FOR MAGNETIC RECORDING MEDIA

Shigeto Miyoshi; Kanehisa Hanabusa, both of Shibukawa, and Shio Kagami, Takasaki, all of Japan, assignors to Denki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 453,918

Claims priority, application Japan, Dec. 28, 1981, 56-209614

Int. Cl.³ B32B *27/30;* **G11B** *5/68, 5/70*

U.S. Cl. 252—62.54 **12 Claims**

1. A magnetic coating for magnetic recording media comprising:

a copolymer comprising:

(A) vinyl chloride

(B) a vinyl carboxylate ester

(C) vinyl alcohol, and

(D) an unsaturated dicarboxylic acid and/or an unsaturated dicarboxylic acid anhydride;

a thermosetting polyurethane resin;

a magnetic powder; and

an organic solvent.

4,476,036

QUATERNARY 1,1,2-TRICHLORO-1,2,2-TRIFLUORO AZEOTROPIC CLEANING COMPOSITION

Francis J. Figiel, Morris, and Aaron Colbert, Essex, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 12, 1983, Ser. No. 531,323

Int. Cl.³ C11D *7/26, 7/30, 7/50;* **C23G** *5/02*

U.S. Cl. 252—171 **5 Claims**

1. An azeotropic mixture consisting essentially of about 44 to 48 parts 1,1,2-trichloro-1,2,2-trifluoroethane, about 42 to 47 parts methylene chloride, about 4.5 to 5.5 parts cyclopentane and about 4.0 to 4.5 parts methanol, said parts being on a weight basis.

3. A method of cleaning a surface by contacting said surface with an azeotropic mixture consisting essentially of about 42 to 47 parts 1,1,2-trichloro-1,2,2-trifluoroethane, about 42 to 47 parts methylene chloride, about 4.5 to 5.5 parts cyclopentane and about 4.0 to 4.5 parts methanol on a weight basis at a boiling temperature of about 33°–34° C. at about 760 mm Hg pressure.

4,476,037

FREE FLOW, READILY DILUTABLE AQUEOUS CONCENTRATES OF A TENSIDE OF THE SULFATE AND SULFONATE TYPE

Uwe Ploog, Haan; Ingo Wegener, Dusseldorf; Johann Glasl, Solingen; Werner Erwied, Langenfeld; Bernhard Bartnick, Monheim-Baumberg, and Rainer Höfer, Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 181,639, Aug., 1980, Pat. No. 4,384,974. This application Feb. 24, 1983, Ser. No. 469,214

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935428; Jan. 29, 1980, 3002993

The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.

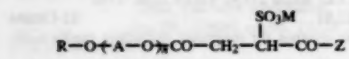
Int. Cl.³ B01F *17/02, 17/04, 17/10*

U.S. Cl. 252—354 **26 Claims**

1. An aqueous concentrate of a tenside of the sulfate and sulfonate type containing at least about 20% by weight of a water-soluble salt of at least one anionic tenside selected from the group consisting of alkaryl polyalkylene ether glycol sulfates, alkyl polyalkylene ether glycol sulfosuccinates, alkaryl polyalkylene ether glycol sulfosuccinates, alkyl sulfates, and alkyl sulfosuccinates and a viscosity reducing amount of a water-soluble salt of a polyglycol ether sulfate selected from the group consisting of monosulfates of poly-lower alkylene ether glycols having a molecular weight of at least 600, disulfates of poly-lower alkylene ether glycols having a molecular

weight of at least 600 and mixtures thereof and from 0 to a viscosity reducing amount of a poly-lower alkylene ether glycol having a molecular weight of at least 1,500.

11. The aqueous concentrate of claim 1 wherein said water-soluble salt of an anionic tenside is a water-soluble salt of an alkyl polyalkylene ether glycol sulfosuccinate having the formula



wherein R is a radical having from 8 to 24 carbon atoms selected from the group consisting of alkyl, alkenyl, alkadienyl and mixtures thereof, A is selected from the group consisting of ethylene and propylene-1,2, n is an integer from 1 to 100, M is a water-soluble cation, and Z is a member selected from the group consisting of —OM and —O—A)$_n$O—R where M, A, R and n have the above-assigned values.

4,476,038

COMPOSITION FOR PREVENTING OR ELIMINATING FOAM, ESPECIALLY IN AQUEOUS SYSTEMS

Jürgen Fock, Düsseldorf, and Hans-Ferdi Fink, Essen, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Fed. Rep. of Germany

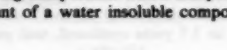
Filed Dec. 10, 1982, Ser. No. 448,687

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 3201479

Int. Cl.^{3} B01D *19/04*; C07C *43/11*

U.S. Cl. 252—358 **16 Claims**

1. A defoaming composition which comprises a defoaming effective amount of a water insoluble compound having the formula



wherein

z=a whole number from 1 to 3;

R^1=a hydrocarbon radical having a functionality of z, and when z is 1, a hydrogen radical;

R^2=hydrogen, alkyl, aryl, —CONHR^3,

or a —SiR$_3^3$ radical, in which at most (100 /z)% of all R^2 radicals may be hydrogen radicals;

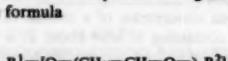
R^3=a monofunctional hydrocarbon radical;

R^4=a linear alkyl radical with an average of 4 to 16 carbon atoms, or methyl, in which case, however, no more than 90 mole percent of the R^4 radicals are methyl; and

n=is a whole number not less than 2,

said compound being dissolved or dispersed in an organic solvent or diluent.

11. A water insoluble compound having defoaming properties having the formula



wherein

z=a whole number from 1 to 3;

R^1=a hydrocarbon radical having a functionality of z, and when z is 1, a hydrogen radical;

R^2=hydrogen, alkyl, aryl, —CONHR^3,

or a —SiR$_3^3$ radical, in which at most (100/z)% of all R^2 radicals may be hydrogen radicals;

R^3=a monofunctional hydrocarbon radical;

R^4=a linear alkyl radical with an average of 4 to 16 carbon atoms, or methyl, in which case, however, no more than 90 mole percent of the R^4 radicals may be methyl; and

n=is a whole number not less than 2.

4,476,039

STAIN-RESISTANT RUTHENIUM OXIDE-BASED RESISTORS

Jacob Hormadaly, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 21, 1983, Ser. No. 460,059

Int. Cl.^{3} A01B *1/06*

U.S. Cl. 252—518 **10 Claims**

1. A printable thick film resistor composition consisting essentially of an admixture of finely divided particles of:

(a) 5–75% wt. a ruthenium oxide-based compound;

(b) 5–50% wt. an oxygen-containing nonalkali metal compound which is thermally stable below 150° C. but which will decompose with the release of oxygen therefrom upon air firing of the composition at 150°–1200° C., the mole ratio of (a) to (b) being at least 0.1; and

(c) 5–20% wt. inorganic binder, dispersed in

(d) 5–45% wt. organic medium.

4,476,040

AROMATIC MUSKS

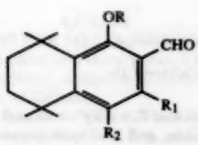
Brian J. Willis, Ramsey, N.J., and Teodosij J. Zazula, Rego Park, N.Y., assignors to Fritzsche, Dodge & Olcott, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 394,847, Jul. 2, 1982, abandoned. This application May 13, 1983, Ser. No. 494,674

Int. Cl.^{3} A61K *7/46*; C11B *9/00*

U.S. Cl. 252—522 R **14 Claims**

1. The compounds having the structure:



wherein R is hydrogen or methyl and, R_1 and R_2 are hydrogen, methyl, or ethyl.

8. A fragrance composition comprising an organoleptically effective amount of a the compound(s) of claim 1 and at least one other organoleptic agent.

4,476,041

PROCESS FOR AUGMENTING OR ENHANCING THE FRESH AIR AROMA OF CONSUMABLE MATERIALS WITH A MIXTURE OF N-ALKANALS HAVING FROM 6 TO 15 CARBON ATOMS

Ira D. Hill, Locust; Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel, and Robin K. Wolff, Point Pleasant, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 384,959, Jun. 4, 1982, Pat. No. 4,434,086. This application Sep. 26, 1983, Ser. No. 535,795

Int. Cl.³ C11B 9/00; C11D 17/00

U.S. Cl. 252—522 R **5 Claims**

1. A process for augmenting or enhancing or imparting a fresh air aroma to a consumable material selected from the group consisting of fragrance formulations, perfumed polymers, detergents and colognes, comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of a mixture consisting essentially of:

(a) from about 0.5 up to about 5% by weight of said aldehyde composition of n-hexanal;

(b) from about 2 up to about 12% by weight of said aldehyde composition of n-heptanal;

(c) from about 5 up to about 15% by weight of said aldehyde composition of n-octanal;

(d) from about 40 up to about 70% by weight of said aldehyde composition of n-nonanal;

(e) from about 10 up to about 30% by weight of said aldehyde composition of n-decanal;

(f) from about 0.5 up to about 5% by weight of said aldehyde composition of n-undecanal;

(g) from about 0.5 up to about 5% by weight of said aldehyde composition of n-dodecanal;

(h) from about 0.5 up to about 5% by weight of said aldehyde composition of n-tridecanal;

(i) from about 0 up to about 5% by weight of said aldehyde composition of n-tetradecanal;

(j) from about 0 up to about 5% by weight of said aldehyde composition of n-pentadecanal.

4,476,042

MONO-OXOMETHYL SUBSTITUTED POLYHYDRODIMETHANONAPHTHALENE DERIVATIVES, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING SAME

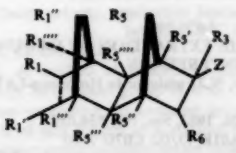
Mark A. Sprecker, Sea Bright; Marie R. Hanna, Hazlet; Richard J. Tokarzewski, Keyport; Robert P. Belko, Woodbridge; Hugh Watkins, Lincroft, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 478,353, Mar. 24, 1983, , which is a division of Ser. No. 354,387, Mar. 2, 1982, Pat. No. 4,391,284. This application Oct. 28, 1983, Ser. No. 546,384

Int. Cl.³ A61K 7/46; C11B 9/00

U.S. Cl. 252—522 R **12 Claims**

1. A process for augmenting or enhancing the aroma of a perfumed article comprising the step of adding to said perfumed article an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:

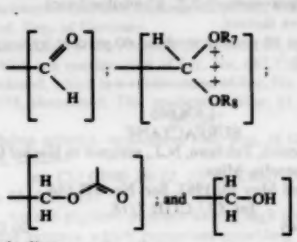


wherein the dashed line represents a carbon-carbon double bond or a carbon-carbon single bond wherein R_1, R_1', R_1'', R_1''', R_1'''', R_3, R_5, R_5', R_5'', R_5''', R_5'''' and R_6 represent hydrogen or methyl; with the provisos:

(i) at least four of R_1, R_1', R_1'', R_1''' and R_1'''' represent hydrogen; and

(ii) at least four of R_5, R_5', R_5'', R_5''' and R_5'''' represent hydrogen

with Z being a moiety selected from the group consisting of:



with the line:

representing a carbon-carbon single bond or no bond at all; and R_7 and R_8 being separately C_1–C_4 lower alkyl or, taken together, being C_2–C_4 alkylene.

4,476,043

SURFACTANT PRODUCT

Anthony J. O'Lenick, Fairlawn, N.J., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 13, 1982, Ser. No. 377,644

Int. Cl.³ C11D 1/18

U.S. Cl. 252—544 **22 Claims**

1. A clear liquid surfactant product comprising:

(a) from about 40 percent to about 90 percent by weight of an organic sulfate or sulfonate in the acid form containing from about 8 to about 22 carbon atoms in the anionic portion of the molecule;

(b) a sufficient amount to neutralize the anionic portion of component (a) of an amine selected from the group consisting of

N,N,N,-tris-(2-hydroxypropyl)amine;

N-(2-hydroxyethyl)-N-(2-hydroxybutyl)amine;

N-(2-hydroxbutyl)-N-(3-hydroxy-2-methylproply)amine;

N-(2-hydroxypropyl)-N-(butyl)amine;

N-(2-hydroxypropyl)-N-(2-hydroxybutyl)amine;

2,2-bis(hydroxymethyl)-2,2',2''-nitriloethanol and mixtures thereof,

(c) from about 10 percent to about 60 percent by weight of an alkanolamide of the formula

$$RC(O)N(CH_2CH_2OH)_2$$

wherein R is from 8 to 22 carbon atoms.

4,476,044

SURFACTANT PRODUCT

Anthony J. O'Lenick, Fairlawn, N.J., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 13, 1982, Ser. No. 377,645

Int. Cl.³ C11D 1/18

U.S. Cl. 252—545 **21 Claims**

1. A substantially non-aqueous surfactant composition comprising:

(a) from about 40 percent to about 90 percent by weight of an organic sulfate or sulfonate in the acid form containing from about 8 to about 22 carbon atoms in the anionic portion of the molecule;

(b) a sufficient amount to neutralize the anionic portion of component (a) of an amine selected from the group consisting of

N,N,N,-tris-(2-hydroxypropyl)amine;

N-(2-hydroxyethyl)-N-(2-hydroxybutyl)amine;
N-(2-hydroxybutyl)-N-(3-hydroxy-2-methylpropyl)amine;
N-(2-hydroxypropyl)-N-(butyl)amine;
N-(2-hydroxypropyl)-N-(2-hydroxybutyl)amine;
2,2-bis(hydroxymethyl)-2,2', 2''-nitriloethanol
and mixtures thereof,

(c) from about 10 percent to about 60 percent by weight of mineral oil.

4,476,045

SURFACTANT

Anthony J. O'Lenick, Fairlawn, N.J., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 13, 1982, Ser. No. 377,646
Int. Cl.³ C11D 1/18
U.S. Cl. 252—545 **20 Claims**

1. A surfactant consisting essentially of the salt of

(a) an acid selected from the group consisting of an organic sulfate or sulfonate in the acid form containing from about 8 to about 22 carbon atoms in the anionic portion of the molecule; and

(b) a sufficient amount to substantially neutralize component (a) of an amine selected from the group consisting of N,N,N,-tris-(2-hydroxypropyl)-amine; N-(2-hydroxyethyl)-N-(2-hydroxybutyl)amine; N-(2-hydroxybutyl)-N-(3-hydroxy-2-methylpropyl) amine; N-(2-hydroxypropyl)-N-(butyl)amine; N-(2-hydroxypropyl)-N-(2-hydroxybutyl amine; and 2,2-bis(hydroxymethyl)-2,2',2''-nitrilotriethanol and mixtures thereof.

4,476,046

BUFFERED ALKALI EARTH METAL SURFACTANT CAKES FOR DOSING DISPENSER

Louis F. Wong, Mason; Rosstain F. Sterling, Milford, both of Ohio, and Thomas A. Borcher, Sr., Melbourne, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 23, 1982, Ser. No. 452,544
Int. Cl.³ C11D 17/00
U.S. Cl. 252—550 **33 Claims**

1. A substantially stable solid cake comprising from 20% to 90% of an alkali earth metal alkyl sulfate, 0% to 30% perfume, 0% to 12% of a dye, 1% to 40% of a compatible water-soluble salt, and an effective amount of a buffer having a pKa of from 6 to 10; said cake weighing from 10 gms to 120 gms and having a density of 0.8 to 1.5, said cake having a pH of 6 to 10, said cake containing at least 1.5% of at least one of said perfume or dye.

4,476,047

PROCESS FOR TREATMENT OF OXIDE FILMS PRIOR TO CHEMICAL CLEANING

Paul J. Bonnici, St. Catherines, and Robert P. Denault, Niagara Falls, both of Canada, assignors to London Nuclear Limited, Ontario, Canada

Filed Mar. 22, 1982, Ser. No. 360,149
Int. Cl.³ G21F 9/00
U.S. Cl. 252—626 **30 Claims**

13. A method of oxidizing chromium(III) components contained in corrosion products deposited on internal surfaces of a nuclear reactor piping system through which a coolant is circulating, said method comprising:

(a) adding to the circulating coolant water-soluble ferrate(VI) salts to form a dilute ferrate solution having a FeO_4^{2-} concentration of at least about 0.01% (weight-/volume) while maintaining the pH of the dilute ferrate solution at between 7 and 14 and the temperature at or below about 80° C.; and

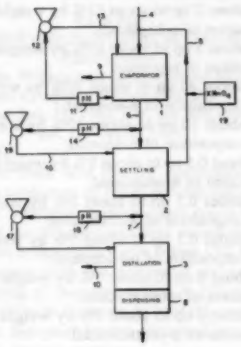
(b) continuing to circulate said dilute ferrate solution to oxidize the chromium (III) compounds contained in said corrosion products with said ferrate until the rate of chromium removal from said deposited corrosion products approaches zero.

4,476,048

METHOD OF TREATING RADIOACTIVE WASTE WATER

Rainer Ambros, Biblis-Wattenheim; Norbert Brenner, Bürstadt; Jürgen Fischer, Essen; Gottfried Paffrath, Hohen Sülzen, and Henrich J. Schroeder, Biblis, all of Fed. Rep. of Germany, assignors to Rheinisch-Westfälisches Elektrizitätswerk AG, Essen, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,185
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110491
Int. Cl.³ G21G 9/08
U.S. Cl. 252—632 **14 Claims**



1. A method of treating radioactive waste water containing boric acid, comprising steps of:

(a) evaporating said waste water to a boric acid concentration above the saturation level at room temperature but below the saturation level at the evaporation temperature to form a concentrate solution of boric acid;

(b) maintaining the pH of said solution during the evaporation in step (a) at substantially neutral;

(c) cooling the solution after evaporation in step (a) to precipitate boric acid from said solution and form a sediment sludge of boric acid;

(d) separating said sludge from a liquid phase in which the pH is reduced to increase the precipitation and settling of boric acid therefrom; and

(e) vacuum distilling water from said sediment sludge to transform the same into a moist powder.

4,476,049

METHOD FOR THE EXTRACTION OF IMMUNE INTERFERON

Hsiang-Fu Kung, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 20, 1983, Ser. No. 534,039
Int. Cl.³ A61K 45/02; C07G 7/00
U.S. Cl. 260—112 R **7 Claims**

1. A method for extracting intact recombinant human immune interferon from transformed microorganisms containing this protein comprising extracting said transformed microorganisms with a protease inhibitor.

4,476,050

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi, Suita; Satoshi Yonishi, Kadoma; Hidekazu Takeno, Tenri; Satoshi Okada, Takatsuki, and Masashi Hashimoto, Takarazuka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 20, 1982, Ser. No. 341,057

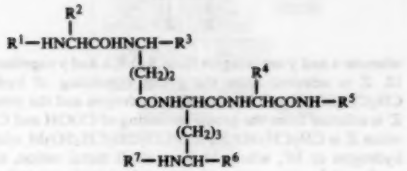
Claims priority, application United Kingdom, Jan. 29, 1981, 8102709

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R 6 Claims

1. A compound of the following formula or its pharmaceutically acceptable salt:



wherein

R^1 is hydrogen, t-butoxycarbonyl, stearoyl, 2-hydroxypropionyl or 2-acetoxypropionyl,

R^2 is methyl,

R^3 is carboxy or benzylcarboxy,

R^4 is hydrogen,

R^5 is hydrogen, benzyl, hexyl or lauryl,

R^6 is carboxy, carbazoyl or t-butoxycarbonylcarbazoyl, and

R^7 is hydrogen, t-butoxycarbonyl or benzyloxycarbonyl.

4,476,051

METHOD FOR PROTECTING AMINO GROUP AND RESTORING THE SAME

Masahiko Fujino, Takarazuka, and Mitsuhiro Wakimasu, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 26, 1982, Ser. No. 436,691

Claims priority, application Japan, Oct. 29, 1981, 56-174125

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R 5 Claims

1. A method of producing peptides having an ω-amino group, an α-amino group or both of said groups which comprises protecting the ω-amino group, the α-amino group or both of said groups in a starting compound containing said ω-amino group, α-amino group or both of said groups, subjecting the protected compound to a peptide synthesis reaction and removing the protective group or groups with an acid, the improvement wherein the protecting group is the 4-methoxy-2,3,6-trimethylbenzenesulfonyl group.

4,476,052

AZO PIGMENT HAVING IMPROVED HIDING POWER AND A PROCESS FOR ITS PREPARATION

Klaus Hunger, Kelkheim; Joachim Rübka, Offenbach am Main; Friedrich Weingarten, Liederbach, and Wolfgang Rieper, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

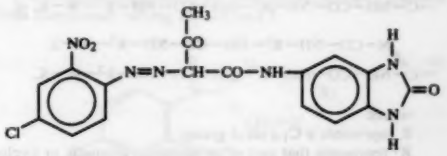
Continuation of Ser. No. 025,051, Mar. 29, 1979, abandoned, which is a continuation of Ser. No. 683,776, May 6, 1976, abandoned, which is a continuation of Ser. No. 434,004, Jan. 17, 1974, abandoned. This application Mar. 11, 1982, Ser. No. 357,287

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1973, 2302516

Int. Cl.³ C09B *29/32, 29/33;* C09D *3/00, 11/02*

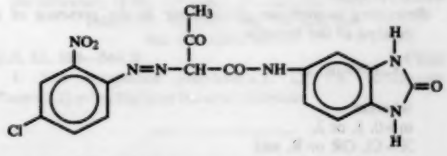
U.S. Cl. 260—157 18 Claims

1. An azo pigment product having high hiding power made by the process which comprises providing a crude pigment resulting from coupling which is of the formula



heating the crude pigment to a temperature in the range of from 100° to 150° C. in (a) an organic solvent, which is miscible with water to an extent no greater than 20 grams of solvent per 100 grams of water, and is selected from the group consisting of higher alcohols from 4 to 8 carbon atoms, halogenated aromatic compounds, aromatic nitro compounds, aromatic ethers, esters or aromatic acids and ketones, or (b) a mixture of such an organic solvent with water, said mixture containing at least 10 percent by weight of solvent, and isolating said azo pigment product.

10. A process for the obtention of an azo pigment product having high hiding power, which comprises heating a crude azo pigment having the formula



to a temperature in the range of from 100° to 150° C. in (a) an organic solvent, which is miscible with water to an extent no greater than 20 grams of solvent per 100 grams of water, and is selected from the group consisting of higher alcohols of from 4 to 8 carbon atoms, halogenated aromatic compounds, aromatic nitro compounds, aromatic ethers, esters of aromatic acids and ketones, or (b) a mixture of such an organic solvent with water, said mixture containing at least 10 percent by weight of said solvent, and isolating said azo pigment product.

4,476,053

SURFACE-ACTIVE AZO COMPOUNDS

Adolf Schmidt, Cologne, and Ernst Roos, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

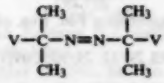
Filed May 3, 1982, Ser. No. 373,988

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118373

Int. Cl.³ B01J 27/24; C07C 107/02; C08G 63/12; C08J 9/00

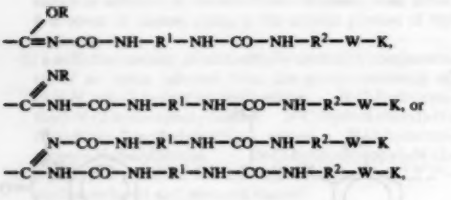
U.S. Cl. 260—192 2 Claims

1. A compound corresponding to the formula



wherein

V represents the groups



where

R represents a C_{1-4} alkyl group;

R^1 represents that part of an aliphatic, aromatic or cycloaliphatic diisocyanate without the isocyanate groups;

R^2 represents a C_{5-12} alkylene or a phenylene group;

W represents a $—COO^{\ominus}$ or $SO_3^{\ominus}$; and

K represents $Na^{\oplus}$, $K^{\oplus}$ or $NH_4^{\oplus}$.

4,476,054

URETIDIONE DIMER OF ISOPHORONE DIISOCYANATE AND METHOD OF PREPARATION

Josef Disteldorf; Werner Hübel, both of Herne, and Elmar Wolf, Recklinghausen, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,499

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030513

Int. Cl.³ C07D 229/00

U.S. Cl. 260—239 A 12 Claims

1. A process for producing a substantially isocyanate-free uretidione dimer of isophorone diisocyanate, which is more than 98% decomposable by heat to isophorone diisocyanate, which comprises:

dimerizing isophorone diisocyanate in the presence of a catalyst of the formula

$$X_mP(NR_2)_{3-m}$$

wherein

m=0, 1, or 2,

X=Cl, OR or R, and

R is selected from the group consisting of the same or different C_1–C_8-alkyl radical, benzyl radical, phenylethyl radical, cyclohexyl radical, and cyclopentyl radical, at temperatures of 0°–80° C.,

isolating the resulting 1,3-diazacyclobutane-2,4-dione after 5–70% conversion, without previous inactivation of the catalyst, from the reaction mixture as the residue of a thin film distillation and isolating the catalyst and monomer as the distillate of said distillation.

9. An uretidione dimer of isophorone diisocyanate which is substantially free of isocyanurate and which is more than 98% decomposable by heat to isophoronediisocyanate.

4,476,055

C21-DICARBOXYLIC ACID ISETHIONATES AS PRIMARY ANIONIC SURFACTANTS

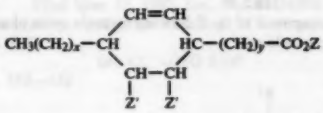
Richard B. Du Vernet, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,252

Int. Cl.³ C07C 143/90; C11D 1/28

U.S. Cl. 260—400 6 Claims

1. Hemi-isethionates of the formula



wherein x and y are integers from 3 to 9, x and y together equal 12, Z is selected from the group consisting of hydrogen, $CH_2CH_2SO_3M$ and M′, one Z′ is hydrogen and the remaining Z′ is selected from the group consisting of COOH and COOM′ when Z is $CH_2CH_2SO_3M$, and $CO_2CH_2CH_2SO_3M$ when Z is hydrogen or M′, where M is an alkali metal cation, alkaline earth metal cation, ammonium or substituted ammonium, and M′ is a cation selected from the group consisting of Li^+, Na^+, K^+, NH_4^+, Mg^{++}, Ca^{++} and substituted amines.

4,476,056

TRIFLUOROMETHOXY ANALOGS OF AROMATIC RETINOIDS

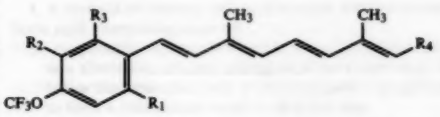
Beverly A. Pawson, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 5, 1982, Ser. No. 439,516

Int. Cl.³ C09F 5/00, 7/00; C11C 3/00; C07C 33/18

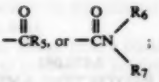
U.S. Cl. 260—404 19 Claims

1. A compound of the formula:



I

wherein R_1 is lower alkyl or halo; R_2 is lower alkyl;



R_5 is hydrogen, hydroxy or lower alkoxy and R_6 and R_7 each are hydrogen or lower alkyl, in any of its various cis and trans stereoisomeric forms and mixtures thereof, or pharmaceutically acceptable salts thereof.

4,476,057

PROCESS OF PRODUCING PEANUT OIL

Akihiro Matsunaga, No. 21-2, 1-chome, Kami-Itabashi, Itabashi-ku, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 425,062

Claims priority, application Japan, Sep. 26, 1981, 56-152307

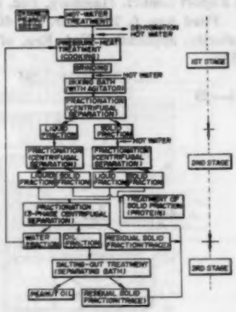
Int. Cl.³ C09F 5/02; C11B 1/00

U.S. Cl. 260—412.2 22 Claims

1. A process of producing a peanut oil, comprising

a first stage comprising the steps of (1) immersing peanut seeds cleared of the skins in hot water for a predetermined

period of time, (2) cooking the resultant peanut seeds in a substantially equal volume of hot water at a predetermined temperature under a predetermined pressure for a predetermined period of time, (3) grinding the cooked peanut seeds into the form of slurry, (4) diluting the slurry with a substantially equal volume of hot water, and (5) mechanically fractionating the diluted slurry into a liquid fraction and a solid fraction,



a second stage comprising the step of (6) mechanically fractionating said liquid fraction into a water fraction, an oil fraction and a residual solid fraction, and

a third stage comprising the steps of (7) adding an aqueous solution of salt to the liquid fraction obtained in the second stage for forming a layer of peanut oil over a layer of solid constituents, and (8) separating the layer of the peanut oil from the layer of the solid constituents.

4,476,058
FLUOROSULFATOPERFLUOROALKANESULFONIC ACID HALIDES

Hans Millauer, Eschborn, and Werner Schwertfeger, Butzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Division of Ser. No. 300,916, Sep. 10, 1981, abandoned. This application May 20, 1983, Ser. No. 496,633
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034550
Int. Cl.³ C07C *141/02*
U.S. Cl. 260—458 F **6 Claims**

1. A fluorosulfatoperfluoroalkanesulfonic acid halide of the formula

$$R_f-\underset{\displaystyle OSO_2F}{\underset{|}{CF}}-(CF_2)_n-SO_2X,$$

wherein R_f is F or perfluoroalkyl having 1–10 carbon atoms, X is Cl or F, and n is a number from 0 to 7.

4,476,059
CHLOROACETONITRILE SYNTHESIS

Robert I. Davidson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Jun. 30, 1983, Ser. No. 509,249
Int. Cl.³ C07C *120/00, 121/16*
U.S. Cl. 260—465.7 **4 Claims**

1. A process which comprises reacting one molar proportion of lactonitrile with at least about 1.2 molar proportions of thionyl chloride in the presence of dichloromethane and at least one molar proportion of a trialkylamine to form 2-chloropropionitrile and then neutralizing the product.

4,476,060
1,3,5,7-TETRANITROXYADAMANTANE

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sep. 26, 1983, Ser. No. 535,481
Int. Cl.³ C07C *77/00*
U.S. Cl. 260—466 **4 Claims**

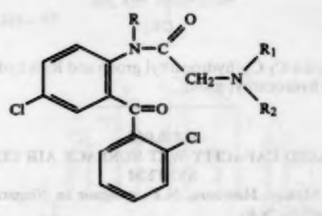
1. 1,3,5,7-Tetranitroxyadamantane.

2. A process for preparing 1,3,5,7-tetranitroxyadamantane which comprises reacting 1,3,5,7-tetrahydroxyadamantane or 1,3,5,7-tetracetoxyadamantane with a nitrating agent.

4,476,061
2'-(ORTHOCHLOROBENZOYL)-4'-CHLOROGLYCYLANILIDES

Gilbert Mouzin; Henri Cousse, and Antoine Stenger, all of Castres, France, assignors to Pierre Fabre, SA, Paris, France
Continuation of Ser. No. 76,841, Sep. 19, 1979, Pat. No. 4,380,667. This application Aug. 18, 1982, Ser. No. 409,320
Claims priority, application France, Sep. 25, 1978, 78 27401
Int. Cl.³ C07C *103/737*
U.S. Cl. 260—501.17 **12 Claims**

1. 2'-(ortho-chlorobenzoyl)-4'-chloroglycylanilides selected from compounds having the formula I:



(I)

in which:

R represents hydrogen or lower-alkyl;

R_1 is selected from hydrogen and lower-alkyl, and R_2 is cycloalkyl having three to six ring members, inclusive,

and pharmaceutically acceptable inorganic or organic acid addition salts thereof.

4,476,062
PSEUDO-P-1,1,2,2,9,9,10,10-OCTOFLUORO[2,2]-P-CYCLOPHANE BIS-ACID CHLORIDE

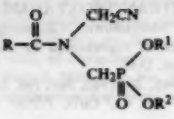
Carl S. Marvel, Tucson, Ariz., and See Lin, Taipei, Taiwan, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 16, 1983, Ser. No. 552,552
Int. Cl.³ C07C *63/72*
U.S. Cl. 260—544 B **1 Claim**

1. The compound pseudo-p-1,1, 2,2 9,9, 10,10-octofluoro[2,2]-p-cyclophane bis-acid chloride.

4,476,063
N-ACYLAMINOMETHYL-N-CYANOMETHYL PHOSPHONATES

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Division of Ser. No. 465,931, Feb. 14, 1983, Pat. No. 4,427,599. This application Oct. 11, 1983, Ser. No. 540,254
Int. Cl.³ C07F *9/40*
U.S. Cl. 260—940 **3 Claims**

1. A compound of the formula



wherein R is C_1–C_4 alkyl and R^1 and R^2 are both C_1–C_6 alkyl.

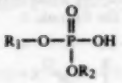
4,476,064

PHOSPHORUS ACID CATALYST FOR PREPARATION OF 3,9-DICHLORO-2,4,8,10-TETRAOXA-3,9-DIPHOSPHA SPIRO (5,5) UNDECANE

Byron E. Johnston, Skillman, and Roger P. Napier, Califon, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1982, Ser. No. 453,971
Int. Cl.³ C07F 9/146, 9/15
U.S. Cl. 260—976 **20 Claims**

1. A process for reacting pentaerythritol with a trivalent phosphorus trihalide conducted in the presence of an effective catalytic amount of phosphorus acid catalyst which is at least one compound of the formula



(I)

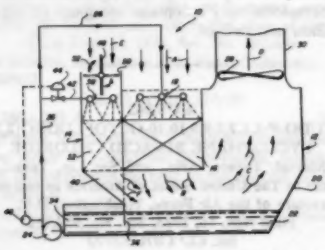
where R_1 is a C_1-C_{20} hydrocarbyl group and R_2 is hydrogen or a C_1-C_{20} hydrocarbyl group.

4,476,065

INCREASED CAPACITY WET SURFACE AIR COOLING SYSTEM

Paul M. McKey, Hamburg, N.Y., assignor to Niagara Blower Co., Buffalo, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,989
Int. Cl.³ B01F 3/04
U.S. Cl. 261—23 R **14 Claims**



1. A wet surface air cooling system, comprising:

a primary wet surface cooling unit which includes heat exchanger means, a collection basin for collecting water directed over the heat exchanger means, and circulation means for selectively drawing a portion of the water from said collection basin and directing the water over the heat exchanger means;

a secondary cooling unit including cooling means, means for selectively diverting a portion of the water from said circulation means and directing the water to the cooling means for simultaneous cooling of the water to increase the cooling capacity of the system, and return means for returning said portion of the water back to the collection basin; and

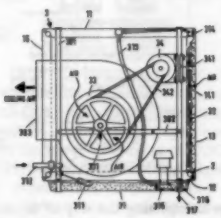
fan means for circulating air through said primary cooling unit, said secondary unit including means for selectively effecting air circulation therethrough by said fan means of the primary cooling unit.

4,476,066

JOINT ASSEMBLY FOR CASING CELLS

Klaus Gollub, Hamburg, Fed. Rep. of Germany, assignor to Bergham Export GmbH, Hamburg, Fed. Rep. of Germany

Filed Aug. 6, 1982, Ser. No. 405,715
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1981, 3131519
Int. Cl.³ B01F 3/04
U.S. Cl. 261—29 **17 Claims**



1. A joint assembly provided on casing cells, box-shaped housings, cable ducts or similar casings, comprising:

at least two relatively fixed wall members essentially opposing each other and being rigidly interconnected to define an open face to be closed;

a detachable wall member for closing said wall face by being moved generally rectilinearly along an opening direction perpendicular to said opening face;

said detachable wall member and said fixed wall members, adjacent thereto, all being provided with abutting faces inclined at an angle to the opening face, with the abutting faces defining a joint gap therebetween, with said fixed wall members being on one side of said joint gap and said detachable wall member being on the other side of said fixed gap;

joint means penetrating said joint gap and being of the tongue and groove type, said joint means having a tongue element extending along the abutting face on said one side of said joint gap and a profile groove extending along the abutting face on the other side of said joint gap and opening into said joint gap, said tongue element and profile groove being of complementary mating shapes;

said profile groove, when seen in the opening direction of the detachable wall member, having a protruding edge forming an undercut and receiving the tongue element behind said protruding edge when said tongue element is inserted into said profile groove to form the joint assembly;

at least one of said profile groove and said tongue element being sufficiently resiliently deformable such that the joint assembly forms a snap joint;

said profile groove and tongue element being respectively fixedly attached to their wall members;

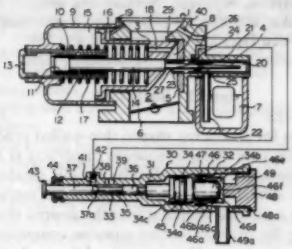
said joint means providing assembly and disassembly of said profile groove and said tongue element such that the detachable wall member is removable rectilinearly essentially in the opening direction perpendicular to the opening face that is closed by the detachable wall member and formed between the opposing fixed wall members, with the removing of the detachable wall member occurring by disconnecting the snap joint through resilient deformation of at least one of said profile groove and tongue element.

4,476,067

DEVICE FOR CONTROLLING THE OPERATION OF A CARBURETOR

Takashi Katou, Mishima; Masaharu Hayakawa, Nagoya, and Hidenori Hirosawa, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

Filed Sep. 29, 1982, Ser. No. 427,294
Claims priority, application Japan, Jan. 22, 1982, 57-007414
Int. Cl.³ F02M 9/06
U.S. Cl. 261—39 A 20 Claims



1. A device for controlling the operation of a carburetor, comprising:

a housing having an axially extending bore therein;

a wax valve fitted into said bore and extending in the axial direction of said bore, said wax valve having a temperature sensitive portion at one end thereof and having a central flange portion which has an outer diameter larger than that of said temperature sensitive portion;

a cup-shaped wax valve holder fitted into said bore so as to surround said temperature sensitive portion, said wax valve holder being spaced from said temperature sensitive portion for forming a heat insulating space therebetween, and having a thickened portion at one end thereof which is located adjacent to the flange portion of said wax valve, said thickened portion having an outer diameter which is slightly smaller than the inner diameter of said bore, said thickened portion having an outer circumferential wall which is spaced from an inner circumferential wall of said bore, and a seal ring inserted between the outer circumferential wall of said thickened portion and the inner circumferential wall of said bore; and

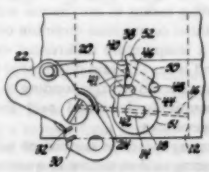
a cooling water passage formed in said bore and surrounding said wax valve holder.

4,476,068

PROGRESSIVE THROTTLE POSITIONING SYSTEM

Michael D. Griffin, Rochester, and Donald J. Lamirande, Spencerport, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1983, Ser. No. 539,271
Int. Cl.³ G05G 7/04
U.S. Cl. 261—65 7 Claims



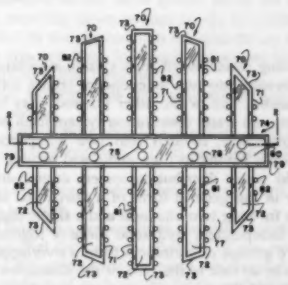
1. A system for positioning a throttle secured to a shaft and adapted to control air flow to an engine, said system comprising a throttle lever secured to said shaft, a drive lever pivotally mounted adjacent said shaft, and a contorted link connected at one end to said drive lever, said link having a first portion adapted to engage a first region of said throttle lever to effect initial throttle opening movement of said throttle lever during initial throttle opening movement of said drive lever and a second portion adapted to engage a second region of said throttle lever to effect subsequent throttle opening movement of said throttle lever during subsequent throttle opening movement of said drive lever, said portions being disposed at spaced locations along the length of said link, and wherein said link has an additional portion disposed at a third location along the length of said link, said additional portion being adapted to engage a third region of said throttle lever to effect throttle closing movement of said throttle lever over the entire range of throttle closing movement of said drive lever.

4,476,069

LIQUID DISTRIBUTING APPARATUS FOR A LIQUID-VAPOR CONTACT COLUMN

Stephen M. Harper, Lake Jackson, and Jeffrey H. Stultz, Freeport, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 469,077, Feb. 23, 1983, Pat. No. 4,432,913, which is a continuation-in-part of Ser. No. 298,058, Aug. 31, 1981, abandoned. This application Dec. 29, 1983, Ser. No. 566,613
Int. Cl.³ B01F 3/04
U.S. Cl. 261—97 2 Claims



1. A trough-type liquid distributor apparatus for use in liquid-vapor contact towers wherein it is desired to uniformly distribute a liquid phase flowing downwardly from troughs spaced across the tower while allowing vapor to rise between the troughs, which distributor comprises:

a. a plurality of spaced, parallel troughs, each of which has orifices in its sides with said orifices being located below the top and above the bottom of said sides; which orifices are substantially uniformly spaced from one another; which orifices are located such that when the distributor is fitted in a tower for operation these orifices are substantially all at the same horizontal level; which orifices are each of the same size in cross-sectional area; which orifices are sufficiently small in said area so as to be capable of maintaining liquid flowing into the troughs under design flowrates at a level in the troughs above the tops of the orifices to insure that the liquid flowing through each opening has a slight head pressure head upon it so that the liquid flowrate of the liquid streamlets flowing through said orifice is substantially uniform from orifice to orifice;

b. a multiplicity of substantially parallel, substantially vertically oriented drip rods attached to the outside of the trough in such a fashion so that substantially all of the orifices have a pair of drip rods associated with them, one drip rod being adjacent an orifice on one side of the orifice

and the other drip rod being adjacent that orifice on the opposite side of that orifice so as to form an "equidistant channel" between the two drip rods of the drip rod pair below the orifice; and

c. said drip rods extending below the bottom of the troughs so that liquid emerging from the orifice between will gravity flow downwardly in the "equidistant channel", past the bottom of said troughs, and on downwardly and off the bottom ends of the drip rods into the tower section below the drip rods in the same distribution pattern as is the distribution pattern of the bottom ends of the drip rods.

4,476,070

COOLING WATER DISTRIBUTION SYSTEM OF COOLING TOWER

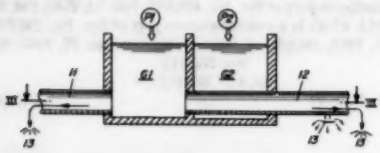
Jean-Claude Blanquet, Houilles, France, assignor to CEM Compagnie Electro-Mecanique, Paris, France

Filed Dec. 9, 1982, Ser. No. 448,234

Claims priority, application France, Dec. 9, 1981, 81 22988

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—151 **3 Claims**



1. Cooling water distribution system associated with a condenser divided into two independent bodies forming separate compartments, one or the other whereof may be temporarily shutdown, said water distribution system itself being, similarly to the condenser, divided into two independent hydraulic circuits, each having its own pump and serving its own sprinklers, said water distribution system comprising an integral assembly in the general form of a horizontal sheet of a low thickness forming two channels and a single support, wherein the said independent hydraulic circuits together with their respective groups of sprinklers form a overlapping pattern of water spray so that in the case of the shutdown of one of the two bodies of the condenser and consequently of one of said hydraulic circuits, the sprinklers belonging to the other circuit which remains in service, are supplied normally without being affected in their operation by the shutdown of the first circuit.

4,476,071

PROCESS FOR ROUNDING OFF GRANULAR PARTICLES OF SOLID MATERIAL

Werner Borer, Flurlingen, Switzerland; Janos Lukacs, Ettikon, Fed. Rep. of Germany, and Hugo Spalinger, Hemmental, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 2, 1982, Ser. No. 446,328

Claims priority, application Switzerland, Dec. 23, 1981, 8244/81

Int. Cl.³ B01J *2/08*

U.S. Cl. 264—15 **2 Claims**

1. A process for rounding off granular irregular shaped solid particles and, more particularly, particles of hard comminuted granulate material of any given irregular shape comprising providing a chamber having an upper zone and a lower zone, providing a first nozzle for introducing a liquid stream into said chamber and a second nozzle for introducing additional liquid for transporting said particles from said lower zone to said upper zone wherein said additional liquid is fed through said second nozzle at a rate of at least twice the rate of feeding said liquid stream through said first nozzle such that the liquid stream in said upper zone of said chamber moves at a speed of not more than 1/10 the average rate of sedimentation of the particles treated such that the particles are kept in continuous relative movement by means of said liquid stream whereby the reciprocal wear of the particles on each other results in the rounding off of the particles.

4,476,072

PROCESSING MASSES OF SUBSTANTIALLY ORGANIC MATERIAL INTO SHAPED PRODUCTS AND ARTICLES SHAPED ACCORDINGLY

Everardus J. Ariëns, Nijmegen, Netherlands, assignor to Vaessen-Schoemaker Holding B.V., Deventer, Netherlands

Filed Dec. 27, 1982, Ser. No. 453,789

Claims priority, application Netherlands, Dec. 30, 1981, 8105898

Int. Cl.³ B06B *1/00*

U.S. Cl. 264—22 **20 Claims**

1. A process for producing shaped thin-walled articles from a shapable mass containing in aqueous dispersion at least one coagulable amphoteric high molecular organic substance such as coagulable animal protein, which comprises extruding the mass through a die that shapes it into the desired thin-walled form, passing the extrude into an aqueous coagulating bath; said dispersion having a pH to one side of the isoelectric point of said substance, and containing sufficient polyvalent ions to inhibit swelling of said substance and formation in the extrudate of an ion-selective barrier against ion penetration; said bath having a pH to the opposite side of said isoelectric point and being substantially free of salt other than at most a small amount of non-dehydrating salt; and in said bath coagulating said substance in the extrudate by effecting a change in the pH of said dispersion such that the isoelectric point of said substance is traversed with a change of the state of charge on the particles thereof.

4,476,073

PROCESS AND SYSTEM FOR ORIENTING LAYERED POLYMER FILMS

Charles R. Ashcraft, Victor, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,221

Int. Cl.³ B29C *17/02*

U.S. Cl. 264—25 **8 Claims**

2. A system for biaxially orienting a multi-layered film structure of (1) at least one polymeric layer optimally orientable at a comparatively low temperature and (2) at least one other polymeric layer optimally orientable at a comparatively higher temperature, said other film being capable of being heated to said higher temperature by microwave heating means; said system comprising in combination:

(a) first heating means in association with said film structure for heating said structure to a first comparatively low temperature;

(b) first microwave heating means in association with said film structure adapted to heat said layer (2) to a first comparatively higher temperature while not substantially, directly increasing the temperature of layer (1);

(c) first orienting means in association with said film structure for uniaxial or machine direction orienting said structure while a temperature differential exists between said layer (1) and layer (2), said differential being of a magnitude at least generally corresponding to that between said first comparatively low and said first comparatively higher temperatures;

(d) second heating means in association with said film structure for heating said structure to a second comparatively low temperature;

(e) second microwave generated heating means in association with said film structure adapted to heat said layer (2) to a second comparatively higher temperature while not

substantially directly increasing the temperature of layer (1);

(f) second orienting means in association with said film structure for biaxial or transverse direction orienting said structure while a temperature differential exists between said layer (1) and layer (2), said differential being of a magnitude at least generally corresponding to that between said second comparatively low and said second comparatively higher temperatures.

4. The process for biaxially orienting a multi-layer structure comprising:

(a) preparing a multi-layered structure comprising (1) at least one polymeric layer optimally orientable at comparatively low temperature and in association therewith (2) at least one other polymeric layer optimally orientable at a comparatively higher temperature, and being capable of being heated to said higher temperature by microwave heating means;

(b) heating said structure to a first comparatively low temperature;

(c) while at said low temperature subjecting said structure to microwave energy to heat said layer (2) to a first comparatively higher temperature while not substantially directly increasing the temperature of layer (1);

(d) while a temperature differential exists between said layer (1) and layer (2), uniaxially or machine direction orienting said structure, said differential being of a magnitude at least generally corresponding to that between said first comparatively low and said first comparatively higher temperatures;

(e) heating said structure to a second comparatively low temperature;

(f) while at said low temperature subjecting said structure to microwave energy to heat said layer (2) to a second comparatively higher temperature while not substantially directly increasing the temperature of layer (1); and

(g) while a temperature differential exists between said layer (1) and layer (2) biaxially or transverse direction orienting said structure, said differential being of a magnitude at least generally corresponding to that between said second comparatively low and said second comparatively higher temperatures.

4,476,074

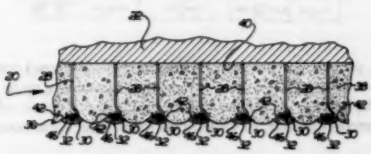
METHOD AND APPARATUS FOR FORMING CAST-IN-PLACE STRUCTURES

Eduardo W. Bindhoff, Fairview Park, Ohio, assignor to Intrusion-Prepakt Incorporated, Cleveland, Ohio

Division of Ser. No. 226,107, Jan. 19, 1981, Pat. No. 4,385,648. This application Oct. 25, 1982, Ser. No. 436,328

Int. Cl.³ E04B *1/16*; E04G *13/00*

U.S. Cl. 264—35 **11 Claims**



1. A method of casting a concrete structure comprising:

providing a woven fabric form element having a first surface providing a first form surface opposed to a second material providing a second form surface,

said woven fabric form element comprising a first set and a second set or perpendicularly related interwoven yarns which extend along first and second dimensions of the woven fabric form element and define said first surface and a corresponding outer surface of the woven fabric form element, one of said yarn sets being the weft of the woven fabric form element and the other being the warp of the woven fabric form element, the interwoven portion of the weft and warp of the fabric having sufficient tensile strength to withstand the hydrostatic pressure applied by a cementitious material and having a weave sufficiently continuous throughout said first surface to confine the cementitious material, a plurality of said first set of yarns extending substantially the extent of said first dimension and floating over a plurality of said second set of yarns at spaced intervals to provide spaced parallel rod receiving means at spaced locations adjacent said first surface of the woven fabric form element each of which extends substantially the extent of said second dimension of said woven fabric form element for receiving a rigid concrete reinforcing and fabric support rod extending substantially the extent of said second dimension of said woven fabric form element for supporting said form element as said first form surface in forming a concrete body, said plurality of first yarns at each of said spaced locations being non-interwoven with said second yarns for a distance sufficient to enable a portion of said interwoven weft and warp of said first surface in said rod receiving means to be pulled away from said plurality of non-interwoven yarns under the influence of the pressure applied against the interwoven warp and weft by the cementitious material to provide a cavity for cementitious material between the support rod in the rod receiving means and the first surface of the woven fabric form element, said plurality of non-interwoven first yarns having a porosity for passing substantial amounts of cementitious material into said cavity in said rod receiving means, and there being a sufficient number of said non-interwoven yarns spaced along the extent of each rod receiving means to support the hydrostatic pressure applied by the cementitious material during the pouring of the concrete body for which said woven fabric form element forms a first form surface,

inserting said support rods into said spaced parallel rod receiving means,

connecting said support rods to a plurality of support elements projecting outwardly from said second form surface, and

flowing a cementitious material between said first and second form surfaces,

said step of flowing a cementitious material including flowing the material through said plurality of non-interwoven first yarns into said cavity between said support rod and the first surface of said woven fabric and between free outer end portions of said support elements and said first surface of said woven fabric.

4,476,075

PROCESS AND APPARATUS FOR THE PRODUCTION OF SHEETING HAVING A COLOR WEDGE

Hans Brinkmann, Troisdorf, and Horst Pabst, St. Augustin-Hangelar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Aug. 5, 1982, Ser. No. 405,405

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132509

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—40.7 **8 Claims**

1. A process for the production of an endless color wedge sheet from a thermoplastic synthetic resin with a colored edge strip, the color intensity of which passes over continuously into an undyed zone, in a region adjoining the colored edge strip, which comprises injecting, into a die composed of two parts of identical cross section,

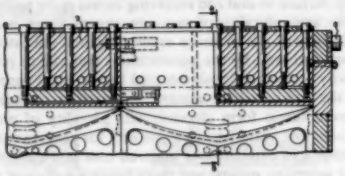
(1) a stream of undyed melt having a predetermined width and

(2) a stream of dyed melt having a width narrower than the stream (1), as well as

(3) a partial stream having a quantity Y of dyed melt and a

partial stream having a quantity (X-Y) of undyed melt, in a width, starting from the parting line between dyed melt and undyed melt, less than the width of the stream of the dyed melt, into the die part for the undyed melt with a continuously decreasing proportion Y of the dyed melt with respect to the undyed melt X, by means of a probe lying in the transverse direction to the flow direction of the melt and exhibiting a groove gradually ending in cross section; effecting coextrusion with merging of the undyed melt stream with the dyed melt stream in the zone of the color wedge whereby, in sheet cross section, an overlapping line, extending obliquely at an ascension angle α of about 5°–30° with respect to the horizontal, separates the undyed sheet material from the dyed sheet material.

5. A slot die apparatus for coextrusion of a partially colored endless thermoplastic sheet having an undyed edge portion, a dyed color-wedge and a dyed edge portion which comprises a feed port for the introduction of an undyed melt of a thermoplastic synthetic resin, a feed port for the introduction of a dyed melt of a thermoplastic synthetic resin, a distributing flow



channel including a deckle bar, bypass means for diverting a portion of the dyed melt from the feed port, and means for defining an outlet nozzle in communication with the distributing flow channel for extruding the partially colored sheet; said means defining the flow channel comprising two die slot elements connected together in side-by-side adjacent relationship which are geometrically identical in longitudinal cross-section and vertical cross-section, one of said die elements effecting the extrusion of the dyed melt and the other of the die slot elements effecting extrusion of the undyed melt, the one die slot element in a zone immediately adjacent to the other die slot element having an injection feed port fed by said bypass means with a portion of said dyed melt, an injection nozzle arranged downstream of the injection feed port, said nozzle extending perpendicular to the extrusion direction of the melt into a portion of the flow channel containing the undyed melt from a parting line extending between the one die slot element and the other die slot element; said injection nozzle having a longitudinal section in a wedge-shape with a wedge angle of about 5°–30° for the formation of the color-wedge of the sheet.

4,476,076

METHOD OF OPEN FORMING AN EXPANDED POLYESTER RESIN ARTICLE INVOLVING A CONTROLLED INDUCTION PERIOD

Glen W. Saidla, Stratham, N.H., assignor to Whitney & Company, Inc., Stratham, N.H.

Continuation-in-part of Ser. No. 111,664, Jan. 14, 1980, Pat. No. 4,358,548, and Ser. No. 215,200, Dec. 10, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,404

The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.

Int. Cl.³ B29D *27/04*

U.S. Cl. 264—45.3 **31 Claims**

1. The method of forming an article of a base composition of synthetic resin, including at least a polyester resin, by open forming techniques, while producing carbon dioxide to expand said resin,

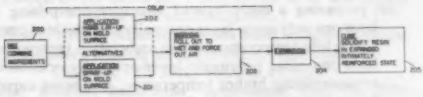
said method comprising the steps of

providing said resin composition in fluid form;

dispersing an organic isocyanate, in the presence of a surfactant, with an organic hydroperoxide in reactive quantities in said resin composition to provide the capability at a predetermined elevated temperature of producing carbon dioxide within said composition and at a higher curing temperature to cure said resin;

at a temperature below said predetermined temperature, depositing said composition containing said dispersion upon a surface;

allowing said isocyanate and hydroperoxide to react in said



dispersed, deposited form while said resin composition is in a fluid state to produce said carbon dioxide and expand said resin;

and thereafter allowing the expanded composition to reach said curing temperature to cure said resin;

the proportions of all ingredients in the composition and dispersion being predetermined to assure that the preponderant quantity of CO_2 produced from said isocyanate results from said reaction with said hydroperoxide.

4,476,077

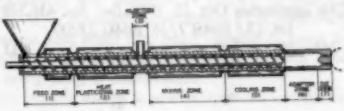
PROCESS FOR PREPARING A POLY(P-METHYLSTYRENE) FOAM

Edward M. Bullard, Rochester; Daniel J. DiBiasi, Pittsford, both of N.Y., and Frank J. Feeney, East Windsor, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,055

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—53 **5 Claims**



1. A process for preparing a poly(p-methylstyrene) consisting essentially of 100% homopolymer or containing up to 50% m-methylstyrene with the almost complete absence of the ortho-methyl isomer, in closed cell foam sheet form comprising:

(a) forming a mixture comprising said poly(p-methylstyrene) and a nucleating agent;

(b) heating the mixture to effect thorough melting of said resin;

(c) combining, under pressure, the resin-nucleating agent mixture with a blowing agent to form a melt; and

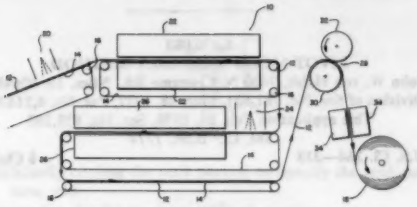
(d) extruding a foam structure from said melt at a temperature and at a rate which will yield a foam structure having an open cell percentage of less than about 20% and which will be at least comparable to that of general purpose polystyrene foam, said extrusion rate being greater than the extrusion rate for said polystyrene foam.

4,476,078

PROCESS FOR MANUFACTURING EMBOSSED NONWOVEN FIBROUS PRODUCTS

Thomas M. Tao, Neenah, Wis., assignor to James River-Dixie/-Northern, Inc., Norwalk, Conn.

Filed May 4, 1982, Ser. No. 374,700
Int. Cl.³ D04N *1/64*
U.S. Cl. 264—119 16 Claims



1. A process for manufacturing embossed air laid nonwoven fibrous webs comprising the steps of:

(a) applying a cross-linkable binder to a fibrous air laid nonwoven web;

(b) partially curing the binder to provide a partially cured and moldable web that maintains physical integrity during transport to an embossing zone, and during embossing;

(c) embossing the partially cured web; and

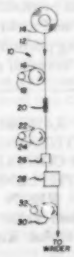
(d) fully curing the embossed web.

4,476,079

PROCESS FOR MANUFACTURE OF TEXTILE YARNS

Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1983, Ser. No. 539,867
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—154 1 Claim



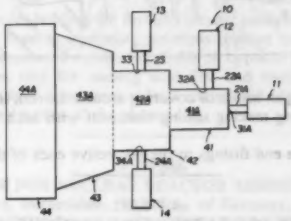
1. In a process for draw fracturing yarn comprising uniformly drawing to a preselected level of utility a yarn comprising a plurality of continuous filaments having a fracturable cross-section, fracturing the filaments by passing the yarn through an operating fluid fracturing jet, and taking up said yarn, the improvement comprising passing said yarn through a turbulent flow air suction device downstream of said drawing and upstream of said fracturing jet, the air suction device being adjusted to provide suction at the entrance thereof to intermingle and immobilize broken filaments by entangling them with unbroken filaments in the yarn and thereby reduce end breaks in the fracturing operation.

4,476,080

METHOD AND APPARATUS FOR PRODUCING A MULTI-LAYER LAMINATED RESIN FILM

Hirohisa Komoda, Kanagawa, and Masatomo Ishihara, Tokyo, both of Japan, assignors to Toyo Seikan Kaisha Ltd. and Tokan Kogyo Co. Ltd., both of, Japan

Division of Ser. No. 258,916, Apr. 30, 1981, Pat. No. 4,410,602.
This application May 10, 1983, Ser. No. 493,253
Claims priority, application Japan, May 8, 1980, 55-59977
Int. Cl.³ B28B *3/20*; B29D *7/02*; B32B *31/06*
U.S. Cl. 264—176 R 3 Claims



1. A process for producing a multilayer laminated resin film comprising the steps of:

feeding a reclaimed synthetic resin mixture under pressure as a first resin into an axial first flow path in each of upper and lower first dies,

feeding a virgin polyethylene resin under pressure as a second resin into a second flow path in each of the upper and lower first dies to form the second resin into a hollow cylindrical shape about said first resin so as to surround the first resin,

flattening the first and second resins and forming a sandwich structure having top and bottom outer layers of the second resin and a middle layer of the first resin in each of the upper and lower second dies to form flattened laminated outer layers,

feeding low gas permeable saponification ethylene-vinyl acetate copolymer as a third resin into a center induction opening on the opposite sides of the second dies to form an inner layer between the laminated outer layers, the second dies being located downstream of the first dies, and

flattening the laminated top and bottom outer layers and the inner layer to a predetermined thickness and securing the laminated outer layers to top and bottom surfaces of the inner layer by an adhesive in a third die located downstream of the second die.

4,476,081

METHOD OF MANUFACTURING AN ORGANIC INSULATOR

Alexandre Kaczerginski, Bellerive sur Allier, and Laurent Pargamin, Vichy, both of France, assignors to Ceraver, Paris, France

Filed May 17, 1982, Ser. No. 379,133
Claims priority, application France, Jun. 1, 1981, 81 10773
Int. Cl.³ B32B *31/06*
U.S. Cl. 264—262 4 Claims

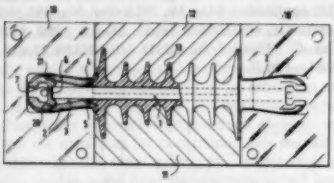
1. A method of manufacturing an insulator having a fiber-reinforced rod with an outer surface and with two ends, the ends being fixed in cup-like cavities of respective end fittings, with the outer surface of the rod between the end fittings having a moulded insulator covering, the method comprising the following steps in sequence:

placing a seal ring on each end of such a fiber-reinforced rod,

sliding each end of the fiber-reinforced rod into a flared entrance of a cup-like cavity formed in a corresponding end fitting so that each of the seals fit into a shoulder in the

flared opening of the corresponding end fitting to form an unfixed insulator assembly;

positioning each end fitting of the insulator assembly into a corresponding one of two spaced apart ends of a mould apparatus;



moulding an insulator covering around the rod, the insulator covering making sealing abutment with each end fitting; and

fixing the end fittings to the respective ends of the rod.

4,476,082

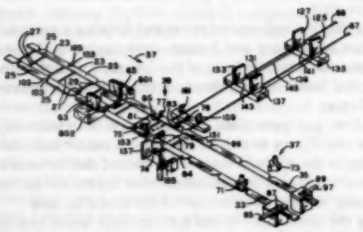
METHODS FOR FABRICATING ELECTRICAL PHASE INSULATORS FOR DYNAMOELECTRIC MACHINES

Richard D. Burns, and Albert J. Wesseldyk, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 271,325, Jun. 8, 1981, Pat. No. 4,378,261, which is a division of Ser. No. 51,029, Jun. 22, 1979, abandoned. This application Jul. 29, 1982, Ser. No. 403,272

Int. Cl.³ B29D *7/24*

U.S. Cl. 264—288.4 **10 Claims**



1. A method of repeatedly permanently stretching and straightening elongated insulating material and feeding the material so stretched to a phase insulation fabricating station, the method including the steps of: gripping an initial segment of the material at spaced apart first and second regions while a previously stretched portion of the material extends from the second region to a third region and toward the fabricating station; moving the gripped second region of material toward the fabricating station and thereby advancing at least part of the previously stretched portion to the fabricating station; yieldably resisting movement of the gripped first region while moving the gripped second region and thereby applying a tensile stress to the material extending between the first and second regions and elongating at least part of the materail so extending between the first and second regions; gripping the advanced previously stretched material at the third region and releasing the material at the first and second regions; gripping unstressed material at a fourth region more remote from the fabricating station than the first region, gripping the material at a fifth region located between the first and second regions, the fourth and fifth regions corresponding, for another segment of material, with the first and second regions for the initial segment of material prior to the application of the tensile stress to the material; releasing the advanced previously stretched material at the third region; and thereafter moving the gripped fifth region toward the fabricating station while yieldably resisting movement of the gripped fourth region while moving the gripped fifth region and thereby applying a tensile stress to the material extending between the fourth and fifth regions and elongating at least the material extending between the fourth region and the first region, and repeating the steps of gripping, moving, yieldably resisting, and gripping and releasing with subsequent segments of the material.

4,476,083

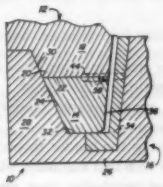
PIVOT MOLD ASSEMBLY METHOD

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Division of Ser. No. 781,631, Mar. 28, 1977, Pat. No. 4,114,849. This application Feb. 16, 1978, Ser. No. 878,283

Int. Cl.³ B29C *1/14*

U.S. Cl. 264—318 **8 Claims**



1. A method for forming a retaining portion comprising first and second molded walls about a freely pivotable member extending through a passage formed in said first molded wall to occupy a position intermediate said first wall and second molded wall, said second molded wall being spaced from said first wall and integrally interconnected with said first wall at a plurality of positions spaced circumferentially about said pivotable member, to define a recess between said first and second walls, comprising the steps of:

positioning mold means to define and form said first and second walls and said pivotable member, positioning a pair of mold members in said recess between said first and second walls to define a mold cavity for forming said retaining portion about said pivotable member;

forming said pivotable member and said retaining portion in said cavity about said pivotable member;

and thereafter spacing said mold members from each other and from said retaining portion to enable retraction of said mold members from between said first and second walls.

4,476,084

METHOD OF STRENGTHENING A NECK PORTION OF A BOTTLE-SHAPED CONTAINER OF BIAXIALLY ORIENTED POLYETHYLENE TEREPHTHALATE RESIN

Takuzo Takada, Tokyo, and Takao Iizuka, Matsudo, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,956

Claims priority, application Japan, May 19, 1981, 56-75584[U]

Int. Cl.³ B29C *25/00, 17/00*

U.S. Cl. 264—342 R **11 Claims**

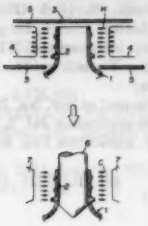
1. A method of strengthening a neck portion, having a bore therethrough, of a bottle-shaped container of biaxially oriented polyethylene terephthalate resin comprising the steps of:

heating the neck portion of said bottle-shaped container to approximately 140° to 170° C.,

inserting a die pin of a cylindrical shape having an outer diameter substantially smaller than the bore of the neck portion into the neck portion thus heated, and

blowing cooling gas onto the outside of the neck portion to

shrink and bring the neck portion into contact with the outer periphery of the die pin,



gradually cooling the neck portion to opacify the neck portion, and

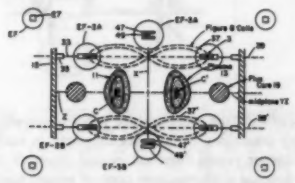
removing the die pin from the neck portion.

4,476,085

STABILIZING WINDINGS FOR TILTING AND SHIFTING MODES

Stephen C. Jardin, and Uffe R. Christensen, both of Princeton, N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 26, 1982, Ser. No. 352,745
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—137 **9 Claims**



1. In an inductively formed plasma ring system, a plasma ring being capable of tilting and shifting and having a major axis, externally produced equilibrium fields on opposite sides of the plasma ring, and internal plasma currents that interact so as to cause at least one of said tilting and said shifting of the plasma ring relative to the externally produced equilibrium fields so as to produce at least one of said unstable tilting and said shifting modes in the plasma ring, a stabilizing means for said plasma ring;

the improvement in said stabilizing means comprising:

a. first, passive, conducting loops in magnetic communication with said modes so as to have produced therein, in response to at least one of said tilting and said shifting modes of said plasma ring first endless induced currents traveling in a first direction corresponding to the direction of first ones of said tilting and said shifting modes of the plasma ring;

said endless induced currents providing additional magnetic fields that produce restoring forces for impeding at least one of said first tilting and said first shifting modes when said first, passive, conducting loops are held fixed in a stationary position relative to the externally produced equilibrium fields on opposite sides of said plasma ring;

b. second, passive, conducting loops transverse to said first, passive, conducting loops in magnetic communication with said modes so as to have produced therein, in response to at least one of said tilting and said shifting modes of said plasma ring, second endless induced currents traveling in a second direction corresponding to the direction of second ones of said unstable tilting and said shifting modes of the plasma ring;

said first and said second conducting loops forming figure-8 shaped loops having axes that are transverse to each other and positioned along the major axis of said plasma ring, on opposite sides thereof;

said induced currents providing still additional magnetic fields that produce restoring forces for counteracting ones of said second tilting and said second shifting modes when said second, passive, conducting loops are held fixed in a stationary position relative to the externally produced equilibrium fields on opposite sides of said plasma ring; and

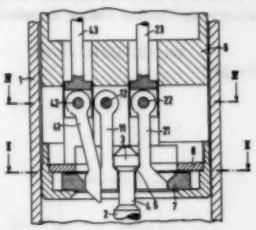
c. means for holding the first and second passive conducting loops fixed in stationary positions relative to said externally produced equilibrium fields on opposite sides of said plasma ring for causing said first and second induced currents to counteract at least one of said tilting and said shifting modes of the plasma ring.

4,476,086

COUPLER FOR NUCLEAR REACTOR ABSORBER RODS

Klaus Kerz, Bornschlade, Fed. Rep. of Germany, assignor to INTERATOM Internationale Atomreaktorbau GmbH, Bergish-Gladbach, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,237
Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119297
Int. Cl.³ G21C *7/08*
U.S. Cl. 376—219 **5 Claims**



1. In a nuclear reactor having absorber rods with gripper heads and undercuts formed immediately below the gripper heads, the absorber rods being suspended during operation of the nuclear reactor, the improvenment comprising a coupler for the absorber rods, including a plurality of actuating elements being moveable for individually and jointly releasing the coupler, said actuating element including coupler claws for engaging the undercuts, and a locking device for holding said coupler claws for simulataneously engaging the undercuts, said locking device being movable transversely to the longitudinal axis of the coupler, and said movement of each of said actuating elements for releasing the coupler being independently controllable.

4,476,087

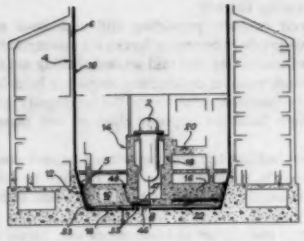
REACTOR BUILDING

Jean C. Hista, Versailles, France, assignor to Framatome, Courbevoie, France

Filed Nov. 17, 1981, Ser. No. 322,386
Claims priority, application France, Nov. 28, 1980, 80 25305
Int. Cl.³ G21C *19/32*
U.S. Cl. 376—285 **8 Claims**

1. A reactor building constituted by a confinement enclosure in which are positioned by a known centering means the internal structures, said confinement enclosure comprising a cylindrical skirt, whose upper part is sealed by a dome and erected on the general floor, the internal structures being constituted

by the internal structure floor, a concrete cylinder called the vessel shaft located substantially in the centre of the internal structure floor, and hot cells, wherein the lower part of the



internal structure floor rests on the general floor by means of a peripheral support ring, a space being provided between the general floor and the internal structure floor.

4,476,088

LATCHING DEVICES AND NUCLEAR REACTORS INCORPORATING SUCH LATCHING DEVICES

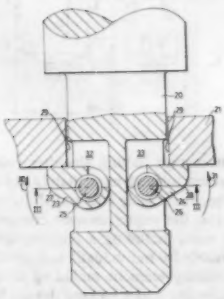
John G. Barnes, Blackburn, England, assignor to Nuclear Power Company Limited, London, England

Filed Oct. 15, 1980, Ser. No. 197,289

Claims priority, application United Kingdom, Oct. 30, 1979, 7937489

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—347 **3 Claims**



1. A nuclear reactor having a core including a stationary core support structure and a plurality of absorber sub-assemblies, each said sub-assembly comprising an absorber rod assembly operable from above the core and an outer housing assembly, each outer housing assembly having at least one pawl pivotally mounted thereon, a face on the core support structure for coacting with each pawl to latch each outer housing assembly to the core support structure, and a mechanical load sensitive element associated with each pawl for shearing on the exceeding of a preselected force of withdrawal of an outer housing assembly from the core support structure and effecting unlatching to permit withdrawal of the respective outer housing assembly from the core support structure, said preselected withdrawal force comprising a mechanical force directed from above, being in excess of that required to move the absorber rod assembly within the housing assembly, and acting in an upward direction so as to free the housing assembly for removal from the core.

4,476,089

HIGH TEMPERATURE REACTOR OF MODULAR CONSTRUCTION

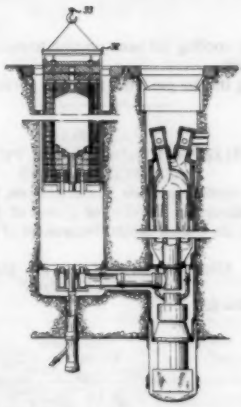
Ulrich Müller-Frank, Bergisch Gladbach; Herbert Reutler, Cologne, and Manfred Ullrich, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to GHT, Gesellschaft fuer Hochtemperaturreaktor-Technik mbH, Bergisch Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 258,368, Apr. 28, 1981, abandoned. This application Jul. 2, 1981, Ser. No. 280,092

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016402

Int. Cl.³ G21C *19/28*

U.S. Cl. 376—381 **7 Claims**



1. Gas-cooled high temperature reactor assembly, comprising a safety container, a chamber disposed in said safety container, a reactor vessel disposed in said chamber for receiving a nuclear reactor with reaction control means and a charge of spherical fuel elements at a given location therein, said reactor vessel being formed of blocks of at least one material from the group consisting of carbon and graphite, a steel shell surrounding said reactor vessel, a metallic base plate supporting said reactor vessel, said base plate having openings formed therein for passing cooling gas blown in said chamber into said given location for a fuel element charge, at least one downwardly extended pipeline having a connection to said base plate for discharging heated gases, said connection being detachable by axial motion of said reactor vessel in one piece with said base plate, a removable cover disposed on top of said chamber, and means disposed on said reactor vessel for connecting said reactor vessel to hoisting apparatus.

4,476,090

MATERIAL FOR JEWELRY AND COMMODITIES AND PROCESS FOR ITS PRODUCTION

Horst Heidsiek, Hanau, and Gernot Jäckel, Hasselroth, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 412,209, Aug. 27, 1982, abandoned. This application May 7, 1984, Ser. No. 608,251

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135034

Int. Cl.³ C03C *3/10*; B22F *3/16*

U.S. Cl. 419—19 **25 Claims**

1. A material suitable for manufacture of jewelry and commodities consisting essentially of at least 30 volume % of a noble metal and 1 to 70 volume % of oxide glass frit, said glass frit having a transformation temperature of 300° to 500° C. and a softening interval of over 80° C., said material having been

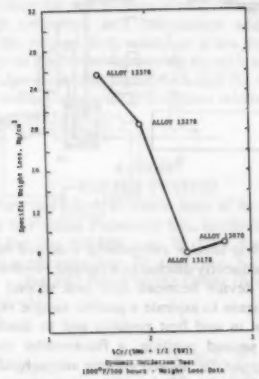
formed by mixing a noble metal powder with a 1 to 70 volume % of glass frit, pressing at room temperature with a 500 to 5000 bar, then sintering at a temperature of 500° to 800° C. and then heat shaping at a temperature of 500° to 700° C. and a pressure of 100 to 200 bar.

4,476,091

OXIDATION-RESISTANT NICKEL ALLOY

Dwaine L. Klarstrom, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Mar. 1, 1982, Ser. No. 353,459
Int. Cl.³ C22C *19/05*
U.S. Cl. 420—443 **5 Claims**



1. An alloy consisting essentially of, in weight percent, aluminum up to 0.5, boron up to 0.02, carbon 0.05 to 0.15, cobalt up to 5, chromium 20 to 24, iron up to 5, lanthanum 0.005 to 0.05, manganese 0.3 to 1.0, molybdenum 1 to 3.5, phosphorus up to 0.03, sulfur up to 0.015, silicon 0.2 to 0.75, tungsten 10 to 20, the combined content of columbium, tantalum, titanium, vanadium and zirconium up to 1.0 total, and the balance nickel plus impurities, provided that the value of

$$\frac{Cr}{Mo + \frac{1}{2}W}$$

is within the range of 2.2 to 2.6, the tungsten to molybdenum ratio is between 4.5 to 1 and 12 to 1, and the Nv number is less than about 2.5 wherein said value and said ratio are controlled to yield a high degree of oxidation resistance and high strength.

4,476,092

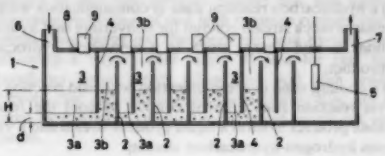
METHOD FOR ADJUSTING THE HUMIDITY OF GAS TO A CONSTANT VALUE

Osamu Nakamura, Ikeda; Isao Ogino, Minoo, and Teruo Kodama, Ikeda, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Mar. 7, 1980, Ser. No. 128,150
Claims priority, application Japan, Mar. 30, 1979, 54-38478
Int. Cl.³ A61L *9/00*
U.S. Cl. 422—4 **8 Claims**

1. A method of adjusting the humidity of a gas to a constant value, comprising:

passing said gas through a plurality of successive compartments in a closed container each containing a saturated aqueous solution of a salt containing crystals of said salt thereby intimately contacting said gas with said saturated salt solution as the gas passes through the salt solution in each of said compartments, the humidity of the gas exiting



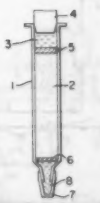
said container being essentially the same as the humidity level for an atmosphere in equilibrium with said aqueous salt solution.

4,476,093

KIT FOR PREPARING SAMPLE FOR USE IN ENDOTOXIN TEST

Ryozo Watanabe, Takatsuki; Keiichi Kawasumi, Hirakata; Shoichi Maeda, Osaka, and Takashi Shoji, Tondabayashi, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Division of Ser. No. 306,647, Sep. 29, 1981, Pat. No. 4,414,336.
This application Apr. 28, 1983, Ser. No. 489,387
Claims priority, application Japan, Sep. 30, 1980, 55-136948; Jan. 28, 1981, 56-11205; Jan. 28, 1981, 56-11204
Int. Cl.³ G01N *33/48, 33/54*
U.S. Cl. 422—61 **13 Claims**



1. A kit for preparing a sample for use in an endotoxin test consisting of:

a sample-developing column prepared by packing a water-insoluble anti-human α_2-macroglobulin antibody and a gel of allyl dextran cross-linked with N,N'-methylenebis acrylamide or a gel of polyvinyl alcohol having many hydrophilic hydroxyl groups as a carrier for gel filtration, both equilibrated with a buffer solution of pH 7.0–7.4, into a column and tightly sealing the column,

an aqueous solution containing a high molecular weight colored substance which serves as an endotoxin marker and has an average molecular weight of 300,000 or higher to be added to the sample, and

a buffer solution for use in developing the sample.

4,476,094

APPARATUS FOR HYDROGEN CONSERVATION IN HYDROGEN RECYCLE PROCESSES

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 4, 1982, Ser. No. 374,858
Int. Cl.³ C01N *33/00*
U.S. Cl. 422—62 **6 Claims**

1. A control system for modifying the flow of hydrogen recycle gas to a reaction apparatus, said apparatus comprising:

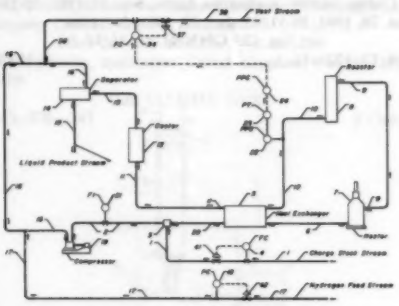
(a) a hydrocarbonaceous charge stock stream conduit in communication with a recycle hydrogen-hydrocarbon stream conduit to mix said hydrocarbonaceous charge stock stream with said recycle hydrogen-hydrocarbon stream;

(b) a hydrocarbon reaction zone in communication with said charge stock stream conduit for converting said hydrocarbons in said charge stock to a converted hydrocarbon product;

(c) a cooling zone in communication with said reaction zone via reaction zone effluent conduit to cool the reaction zone product to form a liquid product stream and a vaporous hydrogen-hydrocarbon stream;

(d) a separation zone in communication with said cooling zone via a cooling zone effluent conduit to separate said cooling zone effluent stream to a liquid product stream, which is withdrawn from the process, and a vaporous hydrogen-hydrocarbon stream, wherein said vaporous stream is bifurcated into a recycle hydrogen-hydrocarbon stream and a vent hydrogen-hydrocarbon stream;

(e) a compressor means in communication with said separation zone via a separation zone effluent conduit and with



said recycle-hydrogen-hydrocarbon stream conduit for passage of said recycle to admixture with said hydrocarbonaceous charge stream; and

(f) a vent conduit in communication with said recycle conduit, having a flow restriction device therein, for removal of a portion of said vaporous hydrogen-hydrocarbon stream from said process; said control system consisting of;

(i) means for sensing the hydrogen concentration of the entire reaction zone effluent in said reaction zone effluent conduit of element (c) before any separation of said liquid product stream from said vaporous hydrogen-hydrocarbon stream;

(ii) comparison means for comparing said sensed hydrogen concentration with a predetermined selected concentration of said hydrogen and developing a signal correlating thereto;

(iii) transmission means for transmitting said developed signal to said flow restriction device in said vent conduit of element (f) and thereby either increasing or decreasing said concentration of said hydrogen in said recycle stream.

4,476,095

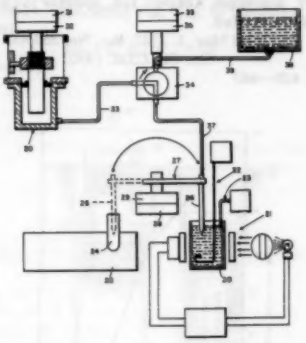
FLUOROMETRIC TITRATOR

Robert L. Scott, 12 Causeway La.; Samuel Nejame, Jr., Charlesdale Rd., both of Medfield, Mass. 02052; Charles S. Jacobs, Jr., 136 Pollard Rd., Mountain Lakes, N.J. 07046, and Charles A. Bell, 18 Wood Ridge Rd., Weston, Mass. 02193

Filed Apr. 12, 1974, Ser. No. 460,297

Int. Cl.³ G01N *31/16*

U.S. Cl. 422—75 **36 Claims**



1. A fluorometric titrator comprising a device operable to aspirate and subsequently discharge a sample, reversible means to transfer said device between first and second positions, sample control means to aspirate a precise sample volume into said device when in said first position and to discharge that volume in said second position, a fluorometer including a cuvette to receive the discharged volume and to hold a reagent that fluoresces when said sample volume is discharged therein, means to deliver chelating agent into said cuvette, a pulse generator controlled by the output of said fluorometer in response to resulting fluorescence to operate the delivery means for the chelating agent at a decreasing rate as the fluorescence is reduced and to produce an indication at the value of a chemical contained in the sample.

4,476,096

CIRCUIT ARRANGEMENT FOR AN APPARATUS FOR MEASURING AND INDICATING THE CONCENTRATION OF COMBUSTIBLE GASES AND VAPORS CONTAINED IN AIR

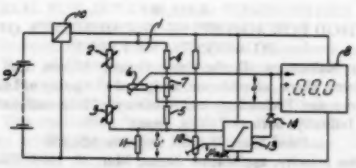
Wolfgang Höht, Berlin, Fed. Rep. of Germany, assignor to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 11, 1982, Ser. No. 407,120

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3132297

Int. Cl.³ G01N *27/16, 31/10*

U.S. Cl. 422—96 **1 Claim**



1. In a circuit arrangement for an apparatus for the measurement and indication of the concentration of combustible gases and vapors contained in air by the thermal effect principle, including a bridge circuit for measurement of thermal effects produced during a combustion process of combustible gases and vapors and for producing a concentration-dependent mea-

suring signal fed to an indicating apparatus, the bridge circuit having gas sensors in respective branches thereof which are in the form of a measuring sensor and a comparison sensor, and a comparator connected for transmitting an additional signal to the indicating apparatus at a specified measuring-bridge-voltage, the improvement comprising:

a. the comparator being connected in parallel with the measuring bridge and, via a diode means, in parallel to the indicating apparatus;

b. a resistance connected in parallel with the comparator and connected in series with the bridge such that concentration-dependent bridge current is measured as a voltage drop across the resistance;

c. the indicating apparatus being a digital indicating device, and

d. a voltage divider connected to the comparator and adapted to provide a reference voltage which is fed to the comparator for comparison of said voltage drop with said voltage reference, said comparator adapted such that when the voltage drop attains or is less than the reference voltage an additional measuring signal is superimposed on the bridge-measuring signal such that the measuring range of the indicating device is exceeded whereby indication is switched off.

4,476,097

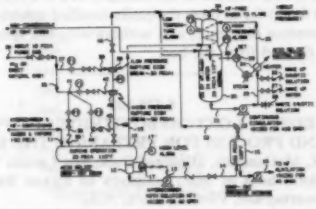
RELIEF SYSTEM

Joe Van Pool, and Mack F. Potts, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Division of Ser. No. 296,948, Aug. 28, 1981, Pat. No. 4,409,420. This application Sep. 27, 1982, Ser. No. 424,801

Int. Cl.³ B01J *10/00*; **G05D** *16/00*

U.S. Cl. 422—112 **6 Claims**



1. A handling system for acid-containing hydrocarbon vapor mixtures, said system comprising in combination:

(a) a liquid knock-out vessel means,

(b) means for introducing an acid-containing hydrocarbon vapor mixtures into said liquid knock-out vessel means,

(c) means to remove liquid from said liquid knock-out vessel means,

(d) a neutralizing vessel means,

(e) means to remove acid-containing vapor from said liquid knock-out vessel means and to pass same to said neutralizing vessel means,

(f) means for removing neutralizing agent from a lower portion of said neutralizing vessel means and to pass same to an upper portion of said neutralizing vessel means, said agent removing means being provided with a heating means to heat circulating neutralizing agent,

(g) means for removing de-acidified vapors from an upper portion of said neutralizing vessel means and for passing same to a flare,

(h) safety by-pass means connecting said liquid knock-out vessel means and said flare, said by-pass means being provided with a high pressure rupture disc in close proximity to said liquid knock-out vessel means and a low pressure rupture disc downstream from said high pressure rupture disc and located between said high pressure disc and said flare, and

(i) means for introducing a sulfur-free and HF-free purge gas into a by-pass line forming part of said safety by-pass means and which is in open communication with the downstream portion of said low pressure rupture disc, means for maintaining open pressure communication between said purge gas introduction means and the upstream portion of said low pressure rupture disc and with the downstream portion of said high pressure rupture disc for introducing purge gas therebetween, said by-pass means affording a vapor relief safety by-pass for said liquid knock-out vessel means when both said high pressure rupture disc and said low pressure rupture disc are ruptured by excessive pressure in the liquid knock-out vessel means.

4,476,098

MICROWAVE HEATED FLUIDIZED BED REACTOR HAVING STAGES

Yutori Nakamori, Yokohama; Tsuyoshi Matsumura, Chiba, and Takeshi Kubota, Kitasohma, all of Japan, assignors to Mitsui Eng. & Shipbuilding; Mitsui Petrochem. Ind., both of Tokyo and Tokyo Shibaura Denki K.K., Kanagawa, all of, Japan

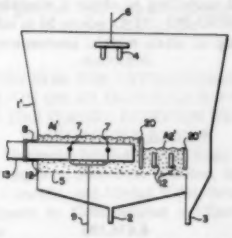
PCT No. PCT/JP81/00209, § 371 Date May 3, 1982, § 102(e) Date May 3, 1982, PCT Pub. No. WO82/00779, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 1, 1981, Ser. No. 380,671

Claims priority, application Japan, Sep. 2, 1980, 55-121606

Int. Cl.³ B01J *8/26, 8/42, 19/08*

U.S. Cl. 422—140 **6 Claims**



1. A fluidized bed-type heating reactor of the form in which water-containing nuclear fuel material is introduced into a fluidized bed so as to undergo a heat-treatment, characterized in that a dispersion plate is provided in a lower portion within a reactor main body laterally extending from one side to a point in the vicinity of the opposite side of the reactor main body; at least two weirs are mounted above the dispersion plate, the at least two weirs being step-wise reduced in height to a discharge opening of the reactor main body, the fluidized bed being partitioned by said at least two weirs into a plurality of laterally continuously arranged fluidized-bed portions; means for delivering microwaves to each of the fluidized-bed portions comprising a waveguide duct which houses one end of an irradiation duct, the other end of which is disposed in respective fluidized bed portions so as to apply microwaves to thereby heat the fluidized-bed portions to different temperatures and have the nuclear fuel material heat-treated.

4,476,099

METHOD OF RECOVERING URANIUM

Floyd E. Camp, Trafford, Pa., and Amy B. Swartzlander, Arvada, Colo., assignors to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Dec. 24, 1980, Ser. No. 219,715

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—10 **13 Claims**

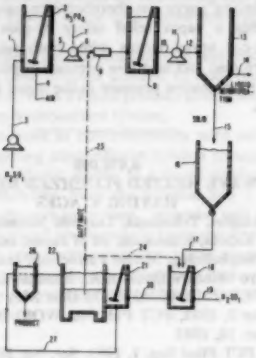
1. A method of recovering uranium from a carbonate leach

solution containing a uranyl carbonate complex and a monovalent ion comprising:

(1) adjusting the pH of said solution to about 5 to about 7.5;

(2) adding phosphate ion to said solution in an amount at least about 10 mole % in excess of the amount needed to react stoichiometrically with said uranium to form a compound of said monovalent ion, uranium, and said phosphate which is insoluble in said solution; and

(3) separating said insoluble compound from said solution.



8. A method according to claim **1** wherein said insoluble compound is $MUO_2PO_4.3H_2O$ where M is selected from the group consisting of alkali metals, ammonium, and mixtures thereof.

4,476,100

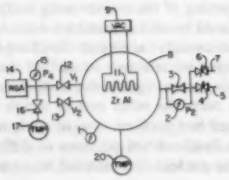
METHOD OF ENHANCING SELECTIVE ISOTOPE DESORPTION FROM METALS

Randall J. Knize, Plainsboro, and Joseph L. Cecchi, Lawrenceville, both of N.J., assignors to The United States of America as represented by the Unites States Department of Energy, Washington, D.C.

Filed Jul. 26, 1983, Ser. No. 517,477

Int. Cl.³ B01D 59/00

U.S. Cl. 423—249 **10 Claims**



1. A method of enhancing the desorption of a first isotope of a diatomic gas from a metal comprises the steps of:

(a) establishing a partial pressure of a second isotope of said diatomic gas in the vicinity of said metal;

(b) heating said metal to a temperature such that said first isotope is desorbed from the metal; and

(c) reducing the partial pressure of said first isotope while maintaining the partial pressure of said second isotope substantially constant.

4,476,101

PRODUCING AMMONIUM URANATE IN SPHERICAL PARTICULATE FORM

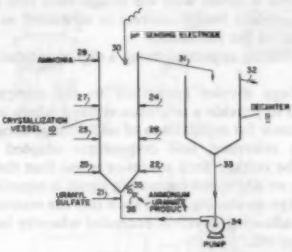
Jacques Dugua, Charly Par Vernaison, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Sep. 3, 1981, Ser. No. 299,021

Claims priority, application France, May 22, 1979, 79 12953

Int. Cl.³ C01G 43/00

U.S. Cl. 423—253 **6 Claims**



1. A process for the production of an easily handled ammonium diuranate in the form of spherical particles having a mean diameter in the range of from 30 to 150 μm, an untamped bulk density of 2 to 2.8 g/cm³, and a Carr scale flowability of at least 95, said process comprising introducing a uranyl sulfate solution and introducing an ammoniacal solution into a fluidized bed of ammonium diuranate particles to produce a supersaturated solution of ammonium diuranate, precipitating the supersaturated solution in the fluidized bed at a pH in the range of from 6.6 to 7.2 to form the easily handled spherical particles of ammonium diuranate, and withdrawing the spherical particles so formed from the bed.

4,476,102

MOLYBDENUM OXYCARBONITRIDE COMPOSITIONS AND PROCESS FOR PREPARING THE SAME

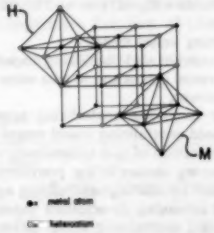
Larry E. McCandlish, Highland Park, and Larissa W. Turaew, Fairlawn, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 24, 1980, Ser. No. 209,998

The portion of the term of this patent subsequent to Jan. 17, 2001, has been disclaimed.

Int. Cl.³ C01C 3/00

U.S. Cl. 423—365 **11 Claims**



1. A composition of matter consisting essentially of molybdenum oxycarbonitride, possessing a face-centered cubic structure, as evidenced by powder X-ray diffractometry and elemental analysis, said composition having interstitial oxygen, carbon and nitrogen atoms distributed throughout the bulk structure.

6. A process for producing the composition of claim **1** comprising the step of thermally decomposing an amine molybdate

at elevated temperature sufficient to form said composition in the presence of a nonoxidizing atmosphere wherein said amine contains at least one single bond C—N grouping.

4,476,103

CATALYTIC PRODUCTION OF METAL CARBONYLS FROM METAL OXIDES

Richard S. Sapienza, Shoreham; William A. Slegeir, Hampton Bays, and Michael T. Foran, Rocky Point, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington

Filed Jan. 6, 1984, Ser. No. 568,762
Int. Cl.³ C01G 1/04
U.S. Cl. 423—417 12 Claims

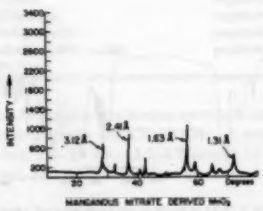
10. A catalytic or stoichiometric process for producing a carbonyl from an oxide selected from molybdenum and iron in the presence of copper as free metal, oxide, or chemically combined, which comprises reacting said molybdenum or iron oxide with CO at about 25 atm. or greater and about 150°–260° C. in the presence of H_2 and H_2O promoters and recovering carbonyl.

4,476,104

MANGANESE DIOXIDE AND PROCESS FOR THE PRODUCTION THEREOF

Geoffrey W. Mellors, Royalton, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 451,877, Dec. 21, 1982, abandoned. This application Mar. 24, 1983, Ser. No. 476,639
Int. Cl.³ C01G 45/02
U.S. Cl. 423—605 9 Claims



1. Manganese dioxide having a surface area no greater than about 15 square meters/gram and having an X-ray diffraction pattern indicating relative intensities, when compared with crystalline beta manganese dioxide, of no greater than about 30% at d value 3.12 Å, of no greater than about 80% at d value 2.41 Å, of no greater than about 65% at d value 1.63 Å and of no greater than about 65% at d value 1.31 Å.

5. A process for the production of manganese dioxide from manganous nitrate hexahydrate-containing material comprising the steps of:

(a) heating in an oxygen-containing atmosphere manganous nitrate hexahydrate-containing material to between about 120° C. and about 180° C. until a substantially complete decomposition of the manganous nitrate into manganese dioxide has occurred; and

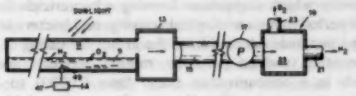
(b) further elevating the temperature to between about 210° C. and about 300° C., and maintaining this temperature until the manganese dioxide has a surface area of no greater than about 15 m^2/gm and an X-ray diffraction pattern indicating relative intensities, when compared with crystalline beta manganese dioxide, of no greater than about 30% at d value 3.12 Å, no greater than about 80% at d value 2.41 Å, no greater than about 65% at d value 1.63 Å and no greater than about 65% at d value 1.31 Å.

4,476,105

PROCESS FOR PHOTOSYNTHETICALLY SPLITTING WATER

Elias Greenbaum, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1982, Ser. No. 343,666
Int. Cl.³ C01B 13/00
U.S. Cl. 423—648 R 11 Claims



1. A process for producing gaseous hydrogen, comprising:

providing a reactor whose interior is isolated from atmosphere and which contains a body of water, said water containing photolytic material, said reactor including a volume for receiving gases evolved from said water,

exposing said material in said reactor to visible light to effect photosynthetic splitting of said water into gaseous hydrogen and oxygen,

pumping on said volume to maintain the oxygen partial pressure therein at a value preventing oxygen-inactivation of said hydrogenase by transferring a gaseous mixture comprising evolved hydrogen and oxygen from said volume into a separation zone, and

separating the gaseous hydrogen and oxygen so withdrawn.

4,476,106

PROCESS FOR THE EXTEMPORANEOUS PREPARATION OF AN INJECTABLE FATTY ACID TAGGED IN THE OMEGA POSITION BY MEANS OF RADIOACTIVE IODINE

André Bardy, Morangis; Michel Comet, Saint Egreve; Sabine Coornaert, Dampierre; Jean-Paul Mathieu, Sassenage; Francoise Riché, Goncelin, and Michel Vidal, Saint Ismier, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 28, 1982, Ser. No. 392,581
Claims priority, application France, Jul. 2, 1981, 81 13039
Int. Cl.³ A61K 43/00, 49/00
U.S. Cl. 424—1.1 20 Claims

1. A process for the preparation of a fatty acid tagged with radioactive iodine, wherein a non-radioactive fatty acid which is substituted in the omega position by an halogen selected from the group consisting of bromine and iodine is reacted with radioactive iodide in the dry state, in the presence of vehicling iodide, to exchange the bromine or iodine of such fatty acid for radioactive iodine.

4,476,107

MOUTHWASH COMPOSITION

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jun. 13, 1983, Ser. No. 503,825
Int. Cl.³ A61K 7/16, 7/18, 7/22
U.S. Cl. 424—49 12 Claims

1. A pleasant tasting aqueous mouthwash which is stable, visually clear, and haze free at temperatures below 8° C. comprising about 60 to 90 percent by weight of water, about 0.01 to 15 percent by weight of flavoring material, from 0 to about 20 percent by weight of a non-toxic alcohol and about 0.5 to 5.0 percent by weight of a nonionic surfactant consisting essentially of a polyoxyethylene-polyoxybutylene block copolymer wherein the polyoxybutylene portion of the compound has a molecular weight of at least about 500 and the polyoxyethylene portions contribute from about 50 to 90 percent by weight of the compound.

4,476,108

BACTERICIDAL METHOD

Jack H. Kessler, 202 W. Newell Ave., Rutherford, N.J. 07070, and Robert S. Rosenbaum, 109 Anawan Ave., West Roxbury, Mass. 02132

Continuation-in-part of Ser. No. 225,762, Jan. 16, 1981, abandoned. This application Feb. 7, 1983, Ser. No. 464,596

Int. Cl.³ A61K 7/28, 7/20, 37/48, 33/40

U.S. Cl. 424—50 8 Claims

1. A method for hygenically treating humans for the dental diseases comprising caries, gingivitis and periodontitis in the oral cavity which comprises: forming a bactericide having a limited period of bacteriological activity; said bactericide comprising a peroxide selected from the group consisting of hydrogen peroxide, sodium peroxide, methyl peroxide and ethyl peroxide in a concentration range from 0.00003 to 3% by weight, a peroxidase within the classification E.C. 1.11.1.7 in a concentration range from 1.0×10^{-4} to 1.0×10^{-1} units per cubic centimeter and a source of predetermined donor molecules adapted to act as a substrate for said peroxidase, with the concentration of said donor molecules being in a range from 0.0001% to 10% by weight storing said three components in a nonreacting state; interacting the three components to cause a catalyzed reaction by said peroxidase for generating free radicals from said source of donor molecules and substantially simultaneously applying the three interacting components as an admixture to any desired location within the oral cavity whereby bacteria present at said location during said limited period of bacteriological activity will be killed.

4,476,109

METHOD OF PREPARING GAMMA GLOBULIN SUITABLE FOR INTRAVENOUS ADMINISTRATION

Tokusuke Kimura, Tokyo; Fumio Kurosu, Hasuda; Toshitsugu Inouchi, Koganei, and Masana Komatsu, Tanashi, all of Japan, assignors to Fujirebio Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,418

Claims priority, application Japan, Sep. 29, 1981, 56-153133

Int. Cl.³ A61K 39/00, 45/02; A23J 00/00; C07G 7/00

U.S. Cl. 424—85 3 Claims

1. A method of preparing a ganma globulin composition consisting of 90 to 95 wt. % gamma globulin and 5 to 10 wt. % albumin and which is suitable for intravenous administration, comprising the steps of:

mixing together a sample of human blood plasma and a quantity of ethanol to form a first mixture, said quantity of ethanol being sufficient to adjust the ethanol concentration of said first mixture to within the range of 8 to 9 vol. %, and holding said first mixture at a temperature of from 0° to −3° C. until a first precipitate and a first supernatant liquid are formed;

centrifuging said first mixture to separately obtain a first precipitate and said first supernatant liquid;

adding ethanol and a buffer to said first supernatant liquid to obtain a second mixture, the amount of ethanol added being such that the ethanol content of said second mixture is in the range of 30 to 35 vol. %, and the amount of said buffer added being such that the pH of said second mixture is adjusted by said buffer to a value within the range of 5.5 to 6.5, and the protein concentration of said second mixture is in the range of 1.0 to 2.0 wt. %, and then maintaining said second mixture at a temperature of approximately −5° C. until a second precipitate and a second supernatant liquid are formed;

centrifuging said second mixture to separately obtain said second precipitate and said second supernatant liquid;

suspending said second precipitate in water and adding a buffer thereto to form a third mixture, the amount of said buffer added being such that the pH of said third mixture is in the range of 4.0 to 5.0;

adding ethanol to said third mixture in an amount such that the ethanol concentration of said third mixture is in the range of 10 to 16 vol. %, and then maintaining said third mixture at a temperature of approximately −5° C. until a third precipitate and a third supernatant liquid are formed;

centrifuging said third mixture to separately obtain said third precipitate and said third supernatant liquid; and

freeze-drying said third supernatant liquid to obtain said gamma globulin composition.

4,476,110

BIOLOGICAL TREATMENT OF PLANTS

Christian C. Heye, Saeckingen, Fed. Rep. of Germany, and John H. Andrews, Verona, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 10, 1982, Ser. No. 376,346

Int. Cl.³ A01N 63/00, 65/00

U.S. Cl. 424—93 4 Claims

1. The method of controlling the damage caused by *Venturia inaequalis* to apple trees which comprises adding to apple tree leaves or leaf litter an effective amount of *Athelia bombacina* to insure the dominance of the *Athelia bombacina* in the microbial community on the apple tree leaves inaequalis.

4,476,111

ANTIBIOTIC S/433 AND PROCESS FOR ITS PREPARATION

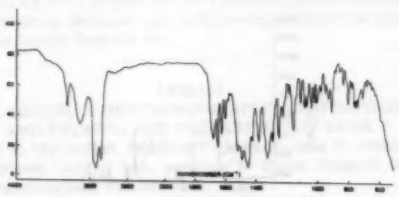
Carolina Coronelli; Angelo Borghi, both of Milan; Giorgio Pirali, Saronno, and Giovanni Mistrello, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Oct. 19, 1981, Ser. No. 312,486

Claims priority, application United Kingdom, Oct. 25, 1980, 8034448

Int. Cl.³ A61K 35/00; C12P 1/06

U.S. Cl. 424—119 4 Claims



1. Antibiotic S/433 which is an orange-red crystalline material which is soluble in dimethylformamide, dimethylsulfoxide, or acetic acid; is slightly soluble in chloroform or methylene chloride; but is insoluble in water, methanol, petroleum ether, or ethyl ether; which, on heating to 150° C. changes its colour to dark orange-red and decomposes with no well defined melting point at 200° C.; and which has:

(A) an approximate elemental composition of 57.88 percent carbon, 5.33 percent hydrogen; 9.51 percent nitrogen, and (by difference) 27.28 percent oxygen;

(B) an infrared absorption spectrum in nujol with the following observable absorption maxima: 3310, 3140, 3020, 2950 (nujol), 2920 and 2860 (nujol), 1680, 1655, 1630, 1605, 1520, 1495, 1460 (nujol), 1425, 1380 (nujol), 1330, 1325, 1290, 1250, 1225, 1190, 1160, 1140, 1110, 1085, 1070, 1040, 1020, 1005, 980, 970, 950, 930, 910, 880, 850, 830, 800, 780, 765, 750, 740, and 710 cm^{-1};

(C) an ultraviolet absorption spectrum with the following absorption maxima:

(a) in 0.1N hydrochloric acid: 268 nm ($E_{1\ cm}^{1\%}=414$); 315 nm ($E_{1\ cm}^{1\%}=335$); 322 (shoulder);

(b) in phosphate buffer pH 7.38: 266 nm ($E_{1\ cm}^{1\%}=414$); 321 nm ($E_{1\ cm}^{1\%}=326$);

(c) in phosphate buffer pH 9.3: 266 nm ($E_{1\ cm}^{1\%}=403$); 322 nm ($E_{1\ cm}^{1\%}=326$);

(D) a titratable group with a pK_a value of 7.8 in methylcellosolve:water 10:15

(E) two polarographic waves with $E_{\frac{1}{2}} = -0.16$ and -0.51 v; (suspended in dimethylformamide/acetate buffer pH 5.4).

(F) the following R_f values in the paper-chromatographic systems indicated below (with Whatman no. 1 paper)

Solvent system	R_f values
n-butanol saturated with phosphate buffer pH 6.0	0.0–0.2
n-butanol saturated with water + 2% p-toluenesulfonic acid	0.0–0.2
n-butanol saturated with water + 2% NH_4OH	0.0
phosphate buffer pH 6.0 saturated with n-butanol	0.7
n-butanol:methanol:water (40:10:20)	0.4
n-butanol:acetic acid:water (2:1:1)	0.75

(G) the following R_f values in the thin-layer chromatographic systems indicated below:

Solvent system (v/v)	R_f values
2% NaH_2PO_4:CH_3CN 6:4 (pH 6.5)	0.45 (on silica gel $60F_{254}$ silanized plates)
chloroform:methanol:acetic acid (80:20:5)	0.38 (on silica-gel $60F_{254}$ plates)

(H) the following characteristic reactions:

Tollens	negative
Fehling	negative
Anthrone	negative
H_2SO_4 conc.	negative
$KMnO_4$ aqueous	positive
Ninhydrin (after acidic hydrolysis)	positive

(I) A proton Magnetic Resonance spectrum which exhibits the following peaks (in CF_3COOH, δ units): 2.12 (s); 2.5–2.6 (m); 3.0–3.4 (m); 3.5–4.7 (m); 4.12 (s); 4.82 (s); 5.1–5.2 (m); 5.51 (s).

4,476,112

FOOD PRESERVATIVE COMPOSITION

Ralph W. Aversano, Hamden, Conn., assignor to Stay Fresh, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 376,414, May 10, 1982, Pat. No. 4,416,909. This application Nov. 14, 1983, Ser. No. 551,026

The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.

Int. Cl.[3] **A01N** *59/00;* **A23B** *4/02, 4/12, 7/10, 7/14*

U.S. Cl. 424—127 **4 Claims**

1. A composition for treating edible products to maintain the desirable color thereof and to maintain freshness consisting essentially of from 10 to 40% of each of the following components:

(a) a material selected from the group consisting of ascorbic acid, the sodium and potassium salts thereof and mixtures thereof;

(b) a material selected from the group consisting of citric acid, the sodium and potassium salts thereof and mixtures thereof;

(c) a material selected from the group consisting of sodium carbonate, potassium carbonate and mixtures thereof; and

(d) a material selected from the group consisting of sodium and potassium sulfite, bisulfite and metabisulfite and mixtures thereof.

4,476,113

STABILIZED FUMIGANT COMPOSITION COMPRISING AN AQUEOUS SOLUTION OF AMMONIA, HYDROGEN SULFIDE, CARBON DISULFIDE AND SULFUR

Donald C. Young, Fullerton, and James A. Green, II, Chino, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 27, 1981, Ser. No. 315,492

Int. Cl.[3] **A01N** *59/04*

U.S. Cl. 424—161 **31 Claims**

1. A fumigant composition comprising an aqueous solution of a solute which comprises an effective amount of ammonia, hydrogen sulfide and carbon disulfide, wherein the molarity of hydrogen sulfide is greater than the molarity of carbon disulfide, and is about one-half the molarity of ammonia.

4,476,114

IRON-SELENIUM PREPARATION

Timo J. Pekkanen, Vantaa, Finland, assignor to Orion-yhtymä Oy, Helsinki, Finland

Filed Apr. 5, 1983, Ser. No. 482,263

Claims priority, application Finland, Apr. 7, 1982, 821233

Int. Cl.[3] **A61K** *33/04, 31/70*

U.S. Cl. 424—164 **5 Claims**

1. An injectable trace element solution comprising a precipitate-free aqueous solution containing a deficiency-treating amount of an iron compound and a selenium compound, wherein the iron compound is ferric dextran, ferric polymaltose or the corresponding hydrolysates thereof, and the selenium compound is selenium dioxide or sodium selenite, the ratio of selenium to iron being from 10^{-5} to 10^{-1} by weight.

5. A method of treating a deficiency state of iron and selenium in a mammal comprising administering to the mammal a deficiency-treating amount of the solution of claim 1.

4,476,115

ANALGESIC COMPOSITION AND METHOD OF TREATING SUBDERMAL PAIN

Raymond E. Reed, P.O. Box 1127, Carefree, Ariz. 85377

Filed Jul. 5, 1983, Ser. No. 510,566

Int. Cl.[3] **A61K** *31/60, 31/165, 31/415, 33/04*

U.S. Cl. 424—164 **11 Claims**

1. A composition for treatment of subdermal pain by topical application to the skin comprising a mixture of (1) an analgesic drug selected from the group consisting of salicylates, phenocetin, acetaminophen, acetanilid, antipyrine, amino-pyrine, phenylbutazone and mixtures thereof with (2) a water-soluble non-toxic sulfite, the weight ratio of sulfite to analgesic drug being from 2:1 to 15:1.

4,476,116

POLYPEPTIDES/CHELATING AGENT NASAL COMPOSITIONS HAVING ENHANCED PEPTIDE ABSORPTION

Shabbir T. Anik, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 10, 1982, Ser. No. 448,547

Int. Cl.[3] **C07C** *103/52;* **A61K** *37/02*

U.S. Cl. 424—177 **14 Claims**

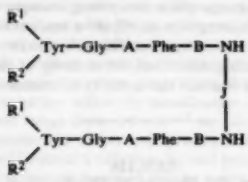
1. A nasal spray composition having enhanced polypeptide absorption which comprises 0.00005 to 10% weight/weight (w/w) of a pharmaceutically active polypeptide; 0.005 to 10% w/w of a pharmaceutically acceptable chelating agent; and a pharmaceutically acceptable excipient in a quantity sufficient to make weight.

4,476,117
DIMERS OF PEPTIDE AMIDES

John S. Morley, Cheadle Hulme, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Dec. 15, 1982, Ser. No. 449,880
Claims priority, application United Kingdom, Jan. 12, 1982, 8200859
Int. Cl.³ C07C 103/52; A61K 37/02
U.S. Cl. 424—177 8 Claims

1. A compound of the formula:



wherein R^1 and R^2, which may be the same or different, stand for an alk-2-enyl radical of not more than 6 carbon atoms, A stands for Gly or Azgly, B stands for Leu or Met, and J stands for a group of the formula $-(CH_2)_n-$, wherein n stands for an integer from 1 to 10, or for a phenylene radical, or a pharmaceutically-acceptable acid-addition salt thereof.

4,476,118
STABILIZED INSULIN PREPARATIONS

Jens J. V. Brange, Klampenborg, and Svend Havelund, Hvidovre, both of Denmark, assignors to Novo Industri A/S, Denmark

Filed Feb. 4, 1983, Ser. No. 463,730
Claims priority, application Denmark, Feb. 5, 1982, 491/82
Int. Cl.³ A61K 37/26
U.S. Cl. 424—178 16 Claims

1. An insulin solution suitable for use in continuous insulin delivery characterized by being physically stable under conditions for such delivery optionally, comprising a preserving agent, an agent rendering the solution isotonic, and a pH-buffering agent, which solution contains essentially ionized zinc in a concentration corresponding to a content of zinc ions at the disposal of the insulin of more than 4 Zn^{2+}/hexamer insulin but below the limit for Zn insulin precipitation.

4,476,119
METHOD FOR PREPARING GANGLIOSIDE DERIVATIVES AND USE THEREOF IN PHARMACEUTICAL COMPOSITIONS

Francesco della Valle, Padua, and Aurelio Romeo, Rome, both of Italy, assignors to Fidia S.p.A., Padua, Italy

Filed Aug. 4, 1981, Ser. No. 290,106
Int. Cl.³ A61K 31/70
U.S. Cl. 424—180 21 Claims

1. A method for stimulating nerve sprouting which comprises administering an effective nerve sprouting stimulating amount of at least one inner ester ganglioside derivative comprising:

(a) a carbohydrate portion, at least one ceramide and at least one acid moiety;

(b) said carbohydrate portion including at least one N-acetylgalactosamine or N-acetylglucosamine moiety and at least one glucose or galactose moiety;

(c) said acid moiety including at least one N-acetylneuraminic acid or N-glycolylneuraminic acid; and

(d) the carboxyl group of at least one of said acid moieties being ester bonded to a hydroxy group of one of said carbohydrates or one of said acid moieties to form a lactonic ring.

8. A pharmaceutical composition for stimulating nerve sprouting which comprises a pharmaceutically acceptable carrier or diluent and an effective nerve sprouting stimulating amount of at least one inner ester ganglioside derivative comprising:

(a) a carbohydrate portion, at least one ceramide and at least one acid moiety;

(b) said carbohydrate portion including at least one N-acetylgalactosamine or N-acetylglucosamine moiety and at least one glucose or galactose moiety;

(c) said acid moiety including at least one N-acetylneuraminic acid or N-glycolylneuraminic acid; and

(d) the carboxyl group of at least one of said acid moieties being ester bonded to a hydroxy group of one of said carbohydrates or one of said acid moieties to form a lactonic ring.

12. A pharmaceutical composition system for stimulating nerve sprouting which comprises a first container containing a solvent system and a second container containing a solid excipient and a lyophilized powder of an effective nerve sprouting stimulating amount of at least one inner ester ganglioside derivative, said ganglioside derivative comprising:

(a) a carbohydrate portion, at least one ceramide and at least one acid moiety;

(b) said carbohydrate portion including at least one N-acetylgalactosamine or N-acetylglucosamine moiety and at least one glucose or galactose moiety;

(c) said acid moiety including at least one N-acetylneuraminic acid or N-glycolylneuraminic acid; and

(d) the carboxyl group of at least one of said acid moieties being ester bonded to a hydroxy group of one of said carbohydrates or one of said acid moieties to form a lactonic ring, whereby the contents of said containers are mixed to form a treatment solution.

4,476,120
THIOLIC DERIVATIVES OF ERYTHROMYCIN HAVING THERAPEUTIC ACTIVITY, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jacques Gonella, Zollikon Zurigo, Switzerland, assignor to Sigma Tau Indistrie Farmaceutiche Riunites, p.A, Rome, Italy

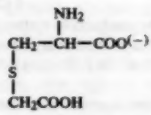
Filed Feb. 2, 1982, Ser. No. 344,960
Claims priority, application France, Feb. 2, 1982, 82 00821
Int. Cl.³ A61K 31/71; C07H 17/08
U.S. Cl. 424—180 12 Claims

1. Thiolic derivatives of erythromycin and of 2'-propionic ester of erythromycin having the formula:

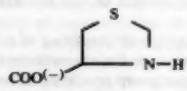
$$R-X \qquad (I)$$

wherein R represents a radical selected from the group consisting of

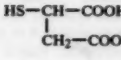
(1) carboxymethylcysteine



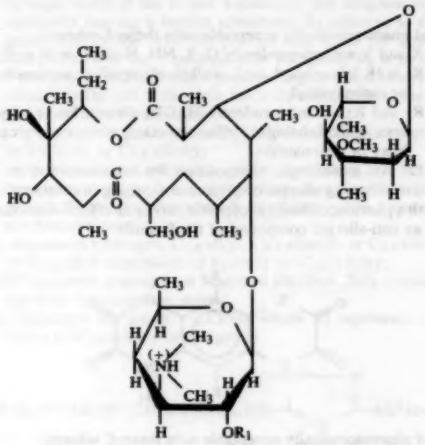
(2) thiazolidin-4-carboxylic acid



(3) mercapto-succinic acid



and X is the radical of erythromycin or of the propionic ester of erythromycin having the formula:



in which R_1 is H or CH_3—CH_2—CO.

9. A process of administering to an animal in need of an antibiotic a compound according to claim 1 in an amount effective as an antibiotic.

4,476,121

BOWEL EVACUANT AND METHOD OF TREATING CONSTIPATION

David W. Moss, 885 Park Ave., New York, N.Y. 10021

Filed Mar. 1, 1983, Ser. No. 470,979
Int. Cl.³ A61K *35/78*
U.S. Cl. 424—195 **5 Claims**

1. A composition useful in the treatment of constipation comprising (a) a first portion of at least two dried fruits selected from the group consisting of prunes, apricots and raisins in approximately equal amounts; and (b) a second portion including about equal quantities of glycerine and compound senna, the ratio of (a) to (b) being about 48:1 to about 12:1.

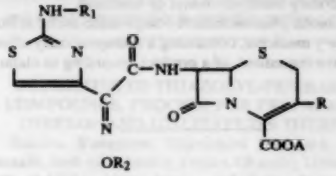
4,476,122

ALKYLOXIMES OF 7-AMINO-THIAZOLYL-ACETAMIDO-CEPHALOSPORANIC ACIDS

René Heymes, Romainville, and André Lutz, Strasbourg, both of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 796,315, May 12, 1977, Pat. No. 4,202,893, which is a continuation-in-part of Ser. No. 781,344, Mar. 25, 1977, abandoned. This application Dec. 13, 1978, Ser. No. 969,208
Claims priority, application France, Mar. 25, 1976, 76 08690
Int. Cl.³ A61K *31/545*; C07D *501/56*
U.S. Cl. 424—246 **14 Claims**

1. A compound of the formula



wherein R is —CH_2—SR', R' is selected from the group consisting of 1-methyl-tetrazolyl and 2-methyl-1,3,4-thiadiazolyl, R_1 is hydrogen, R_2 is selected from the group consisting of alkyl of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms, A is selected from the group consisting of hydrogen, an alkali metal cation, an equivalent of an alkaline earth metal or magnesium, and a non-toxic, pharmaceutically acceptable organic amine base cation and OR_2 is in the syn position.

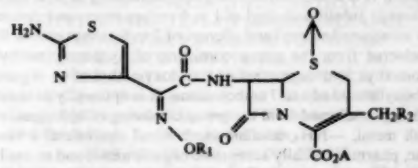
4,476,123

ANTIBIOTIC DERIVATIVES, DERIVED FROM CEPHALOSPORINS WITH THIAZOLYL SUBSTITUENTS, PHARMACEUTICAL PREPARATIONS AND SALTS THEREOF

Bernard Labeeuw, Montpellier, and Ali Salhi, St Gely du Fesc, both of France, assignors to Sanofi, Paris, France

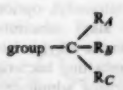
Filed Mar. 2, 1982, Ser. No. 353,890
Claims priority, application France, Mar. 3, 1981, 81 04243
Int. Cl.³ A61K *31/545*; C07D *501/56*
U.S. Cl. 424—246 **7 Claims**

1. Derivatives of the family of cephalosporins having the formula:

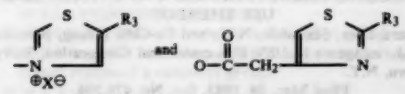


in which A is chosen from the group of cations consisting of alkali metal cations, alkaline earth cations, triethylammonium, 2-hydroxethylammonium, tertiary butyl, and hydrogen;

R_1 represents a



in which R_A and R_B each designate, independently, hydrogen or methyl, or R_A and R_B taken together with the carbon to which they are attached form a cyclobutyl or cyclopentyl ring, and R_C is selected from the group consisting of hydrogen, carboxyl, and tertiarybutoxycarbonyl; and R_2 is selected from the group consisting of



wherein R_3 is H or NH_2 and X^- is a pharmaceutically-acceptable anion; or a pharmaceutically-acceptable acid addition salt

of the compound in which A is a tertiary butyl or hydrogen and R_C is tertiary butoxycarbonyl or carboxyl.

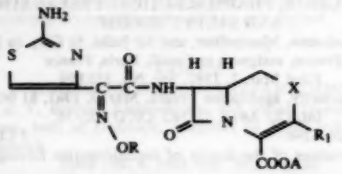
3. An antibiotic pharmaceutical composition useful in human and veterinary medicine, containing a therapeutically effective dose, as active ingredient, of a product according to claim 1 or 2.

4,476,124
2-AMINO-4-THIAZOLYL-2-OXYIMINO-ACETAMIDO-BICYCLOOCTENE-CARBOXYLIC ACIDS

Rene Heymes, Vesoul; Alain Bonnet, Livry-Gargan, and Didier Prouise, Rosny-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

Filed May 12, 1982, Ser. No. 377,597
Claims priority, application France, May 13, 1981, 81 09515
Int. Cl.³ C07D 417/12; A61K 31/54
U.S. Cl. 424—246 **16 Claims**

1. A compound selected from the group consisting of syn isomers of optically active isomers and racemates of 7-[2-(2-amino-4-thiazolyl)-2-oxyimino-acetamido]-bicyclooctene-carboxylic acid derivatives of the formula



I

wherein R is selected from the group consisting of hydrogen, optionally substituted alkyl of 1 to 6 carbon atoms and optionally substituted alkenyl and alkynyl of 2 to 6 carbon atoms, R_1 is selected from the group consisting of hydrogen, methyl, halomethyl, hydroxymethyl and acyloxymethyl of an organic carboxylic acid of 1 to 7 carbon atoms, X is optionally oxidized sulfur, A is selected from the group consisting of hydrogen, an alkali metal, $—NH_4$, alkaline earth metal equivalent, a non-toxic, pharmaceutically acceptable organic amine and an easily cleavable ester group and their non-toxic, pharmaceutically acceptable acid addition salts, the optional substituents being selected from the group consisting of optionally salified or esterified carboxyl, alkoxycarbonyl, carbamoyl, dimethylcarbamoyl, amino, dialkylamino of 1 to 6 alkyl carbons, alkylamino of 1 to 6 alkyl carbons, halogens, alkoxy and alkylthio of 1 to 6 carbon atoms, tetrazolyl, optionally alkyl substituted phenylthio, optionally alkyl substituted tetrazolylthio and thiadiazolylthio wherein the alkyl is 1 to 6 carbon atoms.

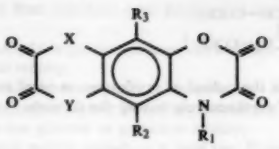
12. A method of combatting bacterial infections in warm-blooded animals comprising administering to warm-blooded animals an antibacterially effective amount of at least one compound of claim 1.

4,476,125
BENZOBISOXAZINETETRONES AND ANTI-ALLERGIC USE THEREOF

Bernard Loev, Scarsdale, N.Y., and Fu-Chih Huang, Boonton, N.J., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Mar. 24, 1983, Ser. No. 478,394
Int. Cl.³ A61K 31/535, 31/54; C07D 498/04, 513/04
U.S. Cl. 424—246 **23 Claims**

1. A compound of the formula



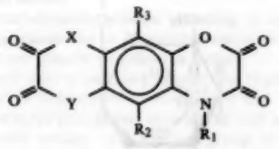
and pharmaceutically acceptable salts thereof, wherein:

X and Y are independently O, S, NH, N-alkyl, or N-aryl;

R_1 is H, lower alkyl, aryl, aralkyl, alkoxyalkyl, aminoalkyl or carboxyalkyl;

R_2 and R_3 are independently H, OH, alkoxy, lower alkyl, aryl, aralkyl, halogen, trifluoromethyl, nitro, cyano, carboxy or sulfonamido.

11. An anti-allergic composition for administration to a mammal having allergic conditions comprising in combination with a pharmaceutically acceptable carrier an effective amount of an anti-allergic compound of the formula



and pharmaceutically acceptable salts thereof, wherein:

X and Y are independently O, S, NH, N-alkyl, or N-aryl;

R_1 is H, lower alkyl, aryl, aralkyl, alkoxyalkyl, aminoalkyl or carboxyalkyl;

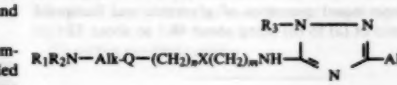
R_2 and R_3 are independently H, OH, alkoxy, lower alkyl, aryl, aralkyl, halogen, trifluoromethyl, nitro, cyano, carboxy or sulfonamido.

4,476,126
1,2,4 TRIAZOZE AMINES AND THEIR PHARMACEUTICAL USE

David E. Bays, and John W. Clitherow, both of Hertfordshire, United Kingdom, assignors to Glaxo Group Limited, London, England

Filed Jun. 11, 1982, Ser. No. 387,530
Claims priority, application United Kingdom, Jun. 11, 1981, 8117955; Jul. 22, 1981, 8122605
Int. Cl.³ A61K 31/45; C07D 403/10, 403/14
U.S. Cl. 424—248.56 **9 Claims**

1. A compound of formula (I)



(I)

or a physiologically acceptable salt or hydrate thereof in which

R_1 represents C_{1-14} alkyl, C_{3-8} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, aryl C_{1-6} alkyl, heteroaralkyl wherein the heteroaryl portion is thienyl, pyrrolyl, pyridyl, furyl or thiazolyl which may be unsubstituted or substituted by C_{1-3} alkyl, C_{1-3} alkoxy, hydroxy C_{1-6} alkyl, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di-C_{1-6} alkyl amino C_{1-6} alkyl or halogen, the alkyl portion of the heteroaralkyl ring is a straight or branched C_{1-4} alkyl chain, and the heteroaryl ring is linked to the alkyl portion through a carbon atom; trifluoro C_{1-6} alkyl or C_{1-6} alkyl substituted by hydroxy, C_{1-6} alkoxy, amino, C_{1-6} alkylamino, di C_{1-6} alkylamino or C_{3-8} cycloalkyl; and R_2 represents hydrogen or C_{1-4} alkyl; or R_1 and R_2 may together with the nitrogen atom to which they are

attached form a piperidino, morpholino, 4-methylpiperidino, pyrrolidino, hexamethylenimino or tetrahydropyridino group; Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms; Q represents a furan or thiophen ring in which incorporation into the rest of the molecule is through bonds at the 2- and 5-positions, the furan or thiophen ring optionally bearing a further substituent R_6 adjacent to the group R_1R_2N-Alk; or Q repesents a thiophen ring in which incorporation into the rest of the molecule is through bonds at the 2- and 4-positions, the thiophen ring optionally bearing a further substituent R_6 adjacent to the group R_1R_2N-Alk with the proviso that when the group R_1R_2NAlk is in the 4-position then the group R_6 is in the 5-position; or Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

R_6 represents halogen or C_{1-4} alkyl which may be substituted by hydroxy or C_{1-4} alkoxy;

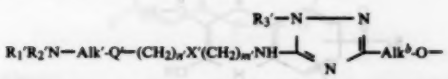
X represents oxygen, sulphur, —NH—, methylene or a bond;

n represents zero, 1 or 2; and m represents an integer from 2 to 5; with the proviso that when X represents —NH— then Q is a benzene ring;

R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl, or C_{2-6} alkyl substituted by hydroxy or C_{1-6} alkoxy;

Alk^a represents a straight or branched alkylene chain containing from 1 to 6 carbon atoms;

R_4 represents the group $-ZCOR_5$ where R_5 represents hydroxy or C_{1-6} alkoxy or the group



in which the symbols R_1', R_2', Alk', Q', n', X', m' and R_3' have meanings which are as defined above for the symbols R_1, R_2, Alk, Q, n, X, m and R_3 respectively but which, in each case, may be the same as or different to the meaning of the latter symbol;

Alk^b represents a straight or branched alkylene chain containing from 1 to 6 carbon atoms;

Z represents an alkylene chain containing from 1 to 16 carbon atoms optionally substituted by one or two C_{1-3} alkyl groups and optionally containing a double or triple bond; or optionally interrupted by an oxygen or sulphur atom, or by a disulphide (S-S) group; or optionally interrupted by a C_{3-8} cycloalkyl or a phenyl group, or Z represents a C_{3-8} cycloalkyl or a phenyl group; or R_4 represents a C_{1-6} straight or branched hydroxyalkyl group, optionally substituted by hydroxy or amino, or an amino C_{1-6} alkyl group optionally substituted by amino, SH, CO_2H, phenyl or 4-hyroxyphenyl; and wherein the term aryl as a group or part of a group means phenyl or phenyl substituted with one or more C_{1-3} alkyl or alkoxy groups or halogenatoms.

9. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as defined in claim 1 to relieve said condition.

4,476,127

7-DIETHYLAMINO-5-METHYL-THIAZOLO[5,4-d]PYRIMIDINE AND PHARMACEUTICAL COMPOSITION CONTAINING SAME

Haruo Ohnishi, Chiba; Hiroshi Kosuzume, Yokohama; Yasuo Suzuki, Kawaguchi, and Ei Mochida, Toshima, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP82/00046, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO 83/02945, PCT Pub. Date Sep. 1, 1983

This PCT application filed Sep. 29, 1982, Ser. No. 433,206

Int. Cl.³ A61K *31/495*; C07D *417/02*

U.S. Cl. 424—250 **2 Claims**

1. A compound defined as 7-diethylamino-5-methyl-thiazolo[5,4-d]pyrimidine and its pharmacologically acceptable salts.

2. A therapeutic composition comprising a cardiovascular disease treating effective amount of 7-diethylamino-5-methyl-thiazolo[5,4-d] pyrimidine or its pharmacologically acceptable salts and a pharmaceutically acceptable carrier.

4,476,128

2-SUBSTITUTED THIAZOLYL-PIPERAZINE COMPOUNDS, PROCESS FOR PREPARATION THEREOF AND UTILIZATIONS THEREOF

Isao Sakano, Kanagawa; Shiyoichiro Miyahara; Yoshitsugu Yamada, both of Fukuoka; Yutaka Okazaki; Hiroshi Tokuda, both of Chiba; Akira Awaya, and Takuo Nakano, both of Kanagawa, all of Japan, assignors to Mitsuitoatsu Chemicals, Inc., Tokyo, Japan

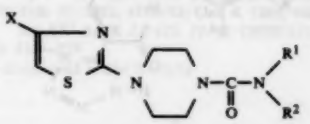
Division of Ser. No. 237,754, Feb. 24, 1981, abandoned. This application Jan. 13, 1983, Ser. No. 458,311

Claims priority, application Japan, Mar. 1, 1980, 55-024648

Int. Cl.³ A61K *31/495*; C07D *417/04*

U.S. Cl. 424—250 **2 Claims**

1. An immunopotentiator comprising a pharmaceutically acceptable diluent or carrier, and, as an effective ingredient, a piperazine compound represented by the following formula (I):



(I)

wherein X is a phenyl group, R^1 is a hydrogen atom or a C_{1-4} alkyl group and R^2 is a hydrogen atom or a C_{1-4} alkyl group, in the form of a free base or a physiologically acceptable acid salt.

4,476,129

4-[2-[BIS(HALOPHENYL)METHOXY]-ETHYL]-α-(SUBSTITUTED PHENYL)-1-PIPERAZINEALKANOL DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL PREPARATIONS CONTAINING THEM

Johan Gootjes, Heerhugowaard, and Hendricus H. van de Kamp, Alphen aan de Rijn, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

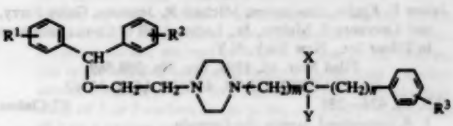
Filed Jun. 29, 1983, Ser. No. 509,168

Claims priority, application Netherlands, Jun. 29, 1982, 8202636

Int. Cl.³ A61K *31/495*; C07D *241/04*

U.S. Cl. 424—250 **19 Claims**

1. A piperazine compound of the formula



in which

R^1 and R^2 each represents 1, 2 or 3 halogen atoms, which may be the same or different and are selected from fluorine chlorine and bromine atoms,

R^3 represents a hydrogen atom or 1, 2 or 3 halogen atoms,

X represents a hydroxy, C_{1-4} alkoxy, phenylcarbamoyloxy or C_{1-4} alkylcarbamoyloxy group,

Y represents a hydrogen atom or a C_{1-3} alkyl group, or

X and Y together with the carbon atom to which they are linked represent a carbonyl group,

m is 1, 2 or 3,

n is 0 or 1, with the proviso that m+n is at most 3,

and their pharmaceutically acceptable acid addition and quaternary ammonium salts.

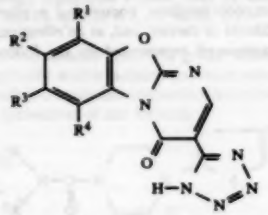
15. A dopaminergic pharmaceutical composition comprising, as the active ingredient, a therapeutically effective amount of one or more piperazine derivatives as claimed in one of the claims 1, 2 and 6–14 in combination with a pharmaceutically acceptable carrier.

4,476,130
3-(1H-TETRAZOL-5-YL)-4H-PYRIMIDO[2,1-B]BENZOXAZOL-4-ONE COMPOUNDS EXHIBITING ANTI-ALLERGIC ACTIVITY

James J. Wade, Oakdale, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Sep. 9, 1982, Ser. No. 416,243
Int. Cl.³ A61K *31/505*; C07D *498/04*
U.S. Cl. 424—251 8 Claims

1. A compound of the formula



wherein R^1, R^2, R^3 and R^4 are each independently selected from the group consisting of hydrogen, an alkyl group containing 1 to about 4 carbon atoms, an alkoxy group containing 1 to about 4 carbon atoms and halogen; and pharmaceutically acceptable salts thereof.

3. A pharmaceutical composition for inhibiting allergic reactions in mammals comprising an effective amount of compound of claim 1 and a pharmaceutically-acceptable vehicle.

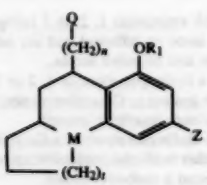
4. A method for inhibiting antigen-antibody reaction in mammals comprising delivering to the known or expected area of said mammalian body where said reaction has occurred or is expected to occur, an effective amount of a compound according to claim 1.

4,476,131
SUBSTITUTED HEXAHYDROPYRROLO[1,2-a]-QUINOLINES, HEXAHYDRO-1H-PYRIDO[1,2-a]-QUINOLINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

James F. Eggler, Stonington; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 16, 1982, Ser. No. 358,569
Int. Cl.³ C07D *455/06, 487/14*; A61K *31/47*
U.S. Cl. 424—258 17 Claims

1. A compound having the formula



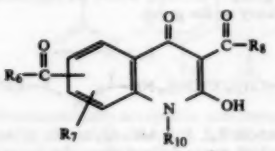
wherein
n is 1 or 2,
t is 1 or 2
M is N
R_1 is H or C_1–C_5 alkanoyl,
Q is $C(OR^7)R_5R_6$,
where R_5 and R_6 are each H, (C_1–C_4)alkyl, phenyl or benzyl;
R_7 is H or when one or both of R_5 and R_6 are hydrogen, R_7 is H or (C_2–C_4)alkanoyl;
Z is (C_5–C_{13})alkyl, (C_5–C_{13})alkoxy, (C_5–C_{13})alkoxyalkyl, (C_9–C_{14})phenylalkyl, (C_9–C_{14})phenylalkoxy or (C_9–C_{14})-phenylalkoxyalkyl.

4,476,132
ACYLQUINOLINONE DERIVATIVES, AND ANTIALLERGIC PREPARATIONS AND METHODS OF INHIBITING ALLERGIC REACTIONS USING THEM

Richard Göschke, Bottmingen; Pier G. Ferrini, Binningen, and Alfred Sallmann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 19, 1982, Ser. No. 360,016
Claims priority, application Switzerland, Mar. 24, 1981, 1986/81
Int. Cl.³ A61K *31/47*; C07D *215/22*
U.S. Cl. 424—258 12 Claims

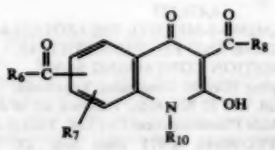
1. A compound of the formula



in which R_6 represents lower alkyl having 3 to 5 carbon atoms; R_7 represents hydrogen or lower alkyl having up to and including 4 carbon atoms, lower alkoxy having up to and including 4 carbon atoms, halogen having an atomic number of up to and including 35, or hydroxy; R_8 represents hydroxy or lower alkoxy having up to 4 carbon atoms; and R_{10} represents lower alkyl, lower alkenyl or lower alkynyl having up to 4 carbon atoms, it also being possible for the 2 hydroxy-4-oxo-1,4-dihydroquinoline structure of the formula to be in the tautomeric 2-oxo-4-hydroxy-1,2-dihydro- or 2,4-dioxo-1,2,3,4-tetrahydroquinoline form, or a salt thereof.

10. A antiallergic preparation comprising an effective amount of one or more than one compound according to claim 1 in the free form or in the form of a pharmaceutically acceptable salt in addition to customary pharmaceutical adjuncts and carriers.

11. A method for inhibiting allergic reactions comprising administering to a warm blooded animal in need of such administration an effective amount of a compound of the following formula



in which R_6 represents lower alkyl having 3 to 5 carbon atoms; R_7 represents hydrogen or lower alkyl having up to and including 4 carbon atoms, lower alkoxy having up to and including 4 carbon atoms, halogen having an atomic number of up to and including 35, or hydroxy; R_8 represents hydroxy or lower alkoxy having up to 4 carbon atoms; and R_{10} represents lower alkyl, lower alkenyl or lower alkynyl having up to 4 carbon atoms, it also being

possible for the 2 hydroxy-4-oxo-1,4-dihydroquinoline structure of the formula to be in the tautomeric 2-oxo-4-hydroxy-1,2-dihydro- or 2,4-dioxo-1,2,3,4-tetrahydroquinoline form, or a salt thereof.

4,476,133

TRIAZOLO-4,1-BENZOXAZEPINES HAVING CNS ACTIVITY

Kentaro Hirai, Kyoto; Shigeru Matsutani, Osaka; Itsuo Makino, Hyogo, and Teruyuki Ishiba, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 250,299, Apr. 2, 1981, Pat. No. 4,324,842. This application Jul. 13, 1982, Ser. No. 397,855

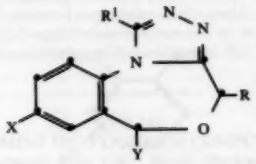
Claims priority, application Japan, Apr. 18, 1980, 55-52185; Sep. 29, 1980, 55-136646

The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Int. Cl.³ A61K *31/55;* **C07D** *498/04*

U.S. Cl. 424—269 **6 Claims**

1. A member selected from the group consisting of a compound of the formula



wherein

X is chlorine;

Y is 2-chlorophenyl, 2-fluorophenyl or 2-trifluoromethylphenyl;

R is hydrogen or methyl, and

R^1 is bromine, mercapto, mercaptomethyl, methylthio, methoxymethyl, acetoxymethyl, hydroxymethyl, chloromethyl, methylthiomethyl, benzyldithiomethyl, dimethylaminomethyl, dimethylaminoethyl, dimethylaminopropyl, dimethylaminoethoxymethyl, dimethylaminopropyloxymethyl or dimethylaminoethylthiomethyl

or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition having central nervous system activity comprising an effective amount of a compound or salt thereof according to claim 1 as an effective ingredient together with a pharmaceutically acceptable carrier, diluent and/or excipient.

4,476,134

PROCESS FOR TREATING PANIC DISORDERS

James H. Coleman, Cumberland, R.I., assignor to The Upjohn Company, Kalamazoo, Mich.

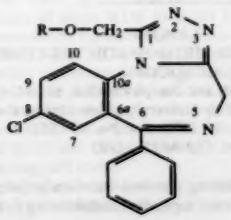
Filed Aug. 1, 1983, Ser. No. 518,333

Int. Cl.³ A61K *31/41*

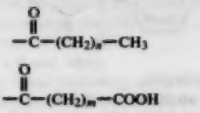
U.S. Cl. 424—269 **7 Claims**

1. A process for preventing or treating panic attacks comprising the administration to a human subject in need of such treatment, in unit dosage form, from about 0.02 mg to about 0.8 mg/kg body weight of a compound of the formula:

Formula I



wherein R is hydrogen, alkyl of from 1 to 3 carbon atoms, inclusive



wherein n is 0 to 16, inclusive, and m is 1 to 16, inclusive; or the pharmacologically acceptable acid addition salt or a (5) N-oxide thereof in association with a pharmaceutical carrier.

4,476,135

AMINO-2,1,3-BENZOTHIADIAZOLE AND -BENZOXADIAZOLE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Peter Neumann, Berne, and Gerhard Bormann, Münchenstein, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

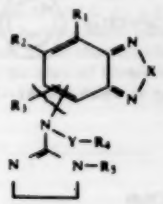
Filed Feb. 16, 1982, Ser. No. 348,872

Claims priority, application Switzerland, Feb. 19, 1981, 1110/81; Feb. 19, 1981, 1111/81; Oct. 9, 1981, 6480/81

Int. Cl.³ A61K *31/425, 31/42;* **C07D** *233/28*

U.S. Cl. 424—270 **6 Claims**

1. A compound of the formula



wherein,

X is oxygen or sulfur;

Y is a bond or oxygen;

R_1, R_2 and R_3, independently, are hydrogen, chloro, bromo, alkyl of 1 or 2 carbon atoms or alkoxy of 1 or 2 carbon atoms;

R_4 is alkyl of 1 to 6 carbon atoms optionally monosubstituted by hydroxy or halo of atomic number of from 9 to 53 and wherein the hydroxy or halo moiety is separated from Y by at least 2 carbon atoms; alkenyl of 3 to 6 carbon atoms optionally monosubstituted by halo of atomic number of from 9 to 53 and wherein the double bond and the halo moiety are separated from Y by at least 2 carbon atoms; alkynyl of 3 to 6 carbon atoms wherein the triple bond is separated from Y by at least 2 carbon atoms; cycloalkyl of 3 or 5 carbon atoms; or cycloalkylalkyl of 3 or 5 carbon atoms in the cycloalkyl moiety and of 1 to 4 carbon atoms in the alkyl moiety thereof;

and R^5 is hydrogen or alkyl of 1 to 4 carbon atoms; or a pharmaceutically acceptable salt form thereof.

4,476,136

AMINOMETHYL-5 OXAZOLIDINIC DERIVATIVES AND THERAPEUTIC USE THEREOF

Philippe L. Dostert, Paris; Alain P. Lacour, La Varenne; Michel Langlois, Buc, and Margherita Strolin-Benedetti, Paris, all of France, assignors to Delalande S.A., Courbevoie, France

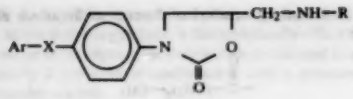
Filed Feb. 24, 1982, Ser. No. 351,888

Claims priority, application France, Feb. 25, 1981, 81 03797

Int. Cl.³ C07D *263/22;* **A61K** *31/42*

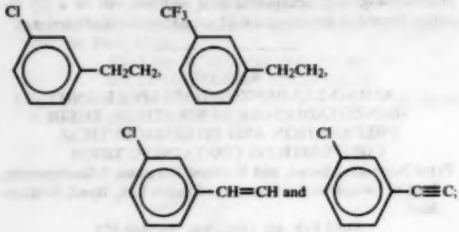
U.S. Cl. 424—272 **5 Claims**

1. A compound corresponding to the formula:

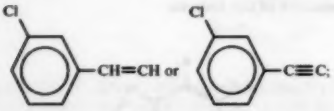


wherein R represents:

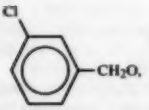
a hydrogen atom, in which case Ar—X represents an element selected from the group consisting of:



an alkyl group having 1 to 4 carbon atoms, in which case Ar—X represents either



a propargyl group, in which case Ar—X the group



and the acid addition salts thereof.

4,476,137

[1-(2-BENZOXAZOLYL)HYDRAZINO]ALKYL NITRILE DERIVATIVES

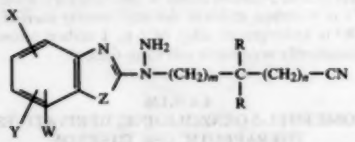
Fortuna Haviv, Deerfield; James D. Ratajczyk, and Francis E. Fischer, both of Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 311,843, Oct. 16, 1981, abandoned. This application Mar. 3, 1983, Ser. No. 471,926

Int. Cl.[3] **A61K** *31/42;* **C07D** *263/58*

U.S. Cl. 424—272 **19 Claims**

1. A compound of the formula



wherein R is hydrogen or loweralkyl; X, Y and W independently of one another denote hydrogen, halogen, loweralkyl, nitro, nitrile, amino, amido, loweralkoxy, lydroxy, mercaptomethyl, or trifluoromethyl, provided that X, Y and W are not simultaneously all nitro or all hydroxy; Z is oxygen; n and m are each an integer from 0 to 6 inclusive; or pharmaceutically acceptable salts thereof.

4,476,138

1-METHYL-5-NITRO-(2-SUBSTITUTED)-2H-IMIDAZOLE DERIVATIVES, AND USE AS BACTERICIDAL AND PROTOZOACIDAL AGENTS

Juan B. A. Scalesciani, Buenos Aires, Argentina, assignor to Farmatis S.r.l., Milan, Italy

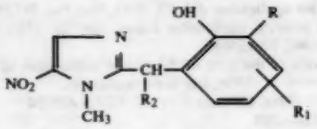
Filed Jul. 14, 1983, Ser. No. 513,915

Claims priority, application Italy, Aug. 20, 1982, 22911 A/82

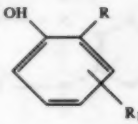
Int. Cl.[3] **A61K** *31/415;* **C07D** *233/22*

U.S. Cl. 424—273 R **5 Claims**

1. Compounds of formula



in which R is linear or branched alkyl of 1–6 carbon atoms, R_1 is H or linear or branched alkyl of 1–6 carbon atoms, and R_2 is OH or



in which R and R_1 are as heretofore defined.

4,476,139

DISCOVERY OF ANTIBIOTIC L-681,217 IN FERMENTATION BROTH

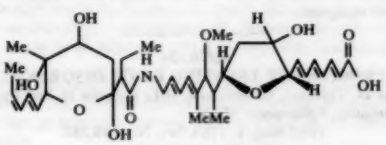
August J. Kempf, Staten Island, N.Y.; Kenneth E. Wilson, Westfield, N.J.; Otto D. Hensens, Middletown, N.J.; Richard L. Monaghan, Somerset, N.J.; Sheldon B. Zimmerman, Springfield, N.J., and Eugene L. Dulaney, Summit, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 29, 1982, Ser. No. 426,585

Int. Cl.[3] **A61K** *31/35;* **C07D** *309/04*

U.S. Cl. 424—283 **3 Claims**

1. The compound L-681,217 of the structure:



and the pharmaceutically acceptable salts thereof.

2. An antibiotic composition comprising an antibiotically effective amount of antibiotic L-681,217 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

4,476,140

COMPOSITION AND METHOD FOR TREATMENT OF GLAUCOMA

Marvin Sears, Branford, and Joseph Caprioli, Hamden, both of Conn., assignors to Yale University, New Haven, Conn.

Filed May 16, 1983, Ser. No. 494,652

Int. Cl.[3] **A61K** *31/35*

U.S. Cl. 424—283 **1 Claim**

1. A method for treating elevated intraocular pressure or glaucoma which comprises topically administering to a patient

suffering therefrom a therapeutically effective amount of a material selected from the group consisting of forskolin, coleforsin and polyoxygenated Labdane derivatives.

4,476,141

USE OF N-(6 AMINOHEXYL)-5-CHLORO-1-NAPHTHALENESULFONAMIDE, N-(6 AMINOHEXYL)-5-CHLORO-2-NAPHTHALENESULFONAMIDE, AND N-(6 AMINOHEXYL)-5-BROMO-2-NAPHTHALENESULFONAMIDE AS VAGINAL CONTRACEPTIVES

Milton J. Cormier, Bogart, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Division of Ser. No. 398,848, Jul. 14, 1982, Pat. No. 4,444,789, which is a continuation-in-part of Ser. No. 155,800, May 30, 1980, Pat. No. 4,443,446. This application Oct. 27, 1983, Ser. No. 545,914

Int. Cl.³ A61K *31/18*

U.S. Cl. 424—321 **8 Claims**

1. A method for preventing conception in a female which comprises: introducing an effective amount of the drug N-(6 aminohexyl)-5-chloro-1-naphthalenesulfonamide, N-(6 aminohexyl)-5-chloro-2-naphthalenesulfonamide or N-(6 aminohexyl)-5-bromo-2-naphthalenesulfonamide into the vagina of the female.

4,476,142

PEPPERMINT OIL FLAVORED COMPOSITIONS

Shelley Netherwood, Brea, Calif.; Bernie Blackwell, Laurelton, and Dominick Piccolo, Brooklyn, both of N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 20, 1982, Ser. No. 450,811

Int. Cl.³ A23G *3/00, 3/30;* A23L *1/221*

U.S. Cl. 426—3 **6 Claims**

1. A flavored chewing gum having a stabilized peppermint oil flavoring agent, which comprises: a chewing gum base and a stabilized peppermint oil incorporated therein in an amount between about 0.01% and about 5.0% by weight of the final composition, wherein the peppermint oil has a previously reduced menthofuran content.

4,476,143

METHOD FOR THE MANUFACTURE OF CHEESE WITH A SUBSTANTIALLY REDUCED FAT CONTENT

Jozef Czulak, Mount Eliza, and Richard Spieler, Doncaster, both of Australia, assignors to David Lavery & Son Proprietary Limited, Melbourne, Australia

PCT No. PCT/AU82/00067, § 371 Date Dec. 30, 1982, § 102(e) Date Dec. 30, 1982, PCT Pub. No. WO82/03971, PCT Pub. Date Nov. 25, 1982

PCT Filed May 5, 1982, Ser. No. 456,012

Claims priority, application Australia, May 12, 1981, PE8824

Int. Cl.³ A23C *9/12, 19/00;* A23L *1/10*

U.S. Cl. 426—40 **6 Claims**

1. The method of manufacturing a reduced fat content cheese from a pasteurized starter batch of milk innoculated with a starter culture and having a standardized fat content of about 0.3% to about 1.5%, comprising the steps of:

(a) adding to said starter batch an amount of about 0.1% to about 1.0% of a *Lactobacillus bulgaricus* culture, an amount of about 0.1% to about 1.0% of a *Streptococcus thermophillus* culture and an amount of about 0.05% to about 0.3% of a *Lactobacillus casei* culture;

(b) adding an amount of a coagulating enzyme to said batch, said amount sufficient to cause coagulation upon heating;

(c) maintaining said batch at a temperature of about 29° C. to about 45° C. for a time sufficient to permit coagulation of said batch into curd and whey;

(d) cutting said curd;

(e) agitating said curd and whey and thereby expelling moisture from said curd;

(f) removing a substantial portion of said whey;

(g) adding a pre-determined amount of heated water to said curd and whey for controlling the pH of said whey;

(h) adding sufficient sodium chloride to said curd and whey to conrol shrinkage of said curd;

(i) agitating said curd and whey;

(j) draining off free liquid consisting essentially of water and whey and thereby providing conditioned curd; and,

(k) forming said conditioned curd into cheese having a pH of about 5.1 to about 5.5.

4,476,144

PROCESS FOR PRODUCING CONCENTRATED SHOYU

Seiji Kitahara; Keitaro Mogi; Thoziro Shimada, all of Noda; Fumio Noda, Kamagaya, and Yoshihiro Tateyama, Noda, all of Japan, assignors to Kikkoman Corporation, Noda, Japan

Filed Jun. 30, 1982, Ser. No. 393,861

Claims priority, application Japan, Jul. 10, 1981, 56-107146

Int. Cl.³ A23L *1/20, 1/238*

U.S. Cl. 426—46 **3 Claims**

1. A process for producing a concentrated shoyu which comprises adding and mixing a shoyu koji into a brewing water, said brewing water present in an amount of 1.25–6.25 times the weight of said shoyu koji, followed by fermenting andaging the mixture at 25°–30° C. for 4–8 months with intermittent agitation, said brewing water being a juice separated from a shoyu moromi 15–60 after the charge of said shoyu moromi and before the start of fermentation of said shoyu moromi.

4,476,145

METHOD FOR AGGLOMERATING MOISTURE SENSITIVE MATERIALS

Darlene A. Hardie-Muncy, Bear; Guy C. Coker, and Ronald P. Wauters, both of Dover, all of Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 31, 1982, Ser. No. 363,978

Int. Cl.³ A21D *2/00*

U.S. Cl. 426—285 **9 Claims**

1. A process for making a nonsegregating, free flowing, dehydrated food mixture from a plurality of particulate, dehydrated ingredients comprising:

a. dissolving a hydrophylic binding agent in water in a manner effective to produce a hydrophylic binding agent solution containing between 3 and 20% by weight of the hydrophylic binding agent;

b. whipping the hydrophlic binding agent solution to produce a foam with an overrun between 350 and 750%;

c. adding between about one twentieth and about twenty parts of the dehydrated ingredients to each part of the foam;

d. mixing the dehydrated ingredient and foam admixture in a manner effective to produce foam coated ingredients;

e. adding between one tenth and ten parts of uncoated ingredients to each part of foam-coated ingredients, wherein said uncoated ingredients having a size and density profile different from the foam-coated ingredients;

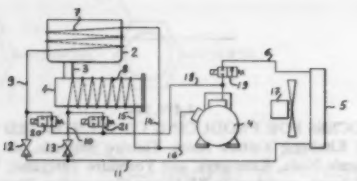
f. thoroughly mixing the foam-coated and uncoated ingredient admixture; and

g. drying the product to a final moisture of less than 15% to produce a nonsegregating, free flowing, dehydrated mixture.

4,476,146
METHOD OF PASTEURIZING AN EDIBLE FROZEN CONGEALED IN MACHINES PROVIDED WITH GAS-COMPRESSION REFRIGERATING CIRCUIT

Ezio Manfroni, 56, Via Altopiano, Sasso Marconi, Bologna, Italy

Filed Feb. 12, 1982, Ser. No. 348,296
Claims priority, application Italy, Feb. 27, 1981, 12451 A/81
Int. Cl.³ A23C *3/02, 3/04;* **A23G** *9/04, 9/30*
U.S. Cl. 426—522 **1 Claim**



1. A method of pasteurizing an edible liquid mixture congealable upon freezing to form a frozen congealed product in an apparatus for making ice cream or similar edible frozen congealed products wherein said apparatus includes a compressor having delivery and suction ports; a first conduit extending from the delivery port; a condenser connected on one side to the first conduit; an expansion valve; an evaporator, said evaporator being connected on an inlet side to the side of the condenser opposite the connection to the first conduit through the expansion valve and on the other side to the suction port of the compressor, said evaporator being in heat exchange relationship with a chamber containing said edible mixture; a by-pass conduit extending from the delivery port of the compressor, said inlet side of the evaporator being in selective fluid communication with said by-pass conduit so that said by-pass conduit by-passes said expansion valve; and switching means for selectively establishing fluid communication between the delivery port of the compressor and either the first or by-pass conduit, the method comprising the steps of:

(a) establishing fluid communication between the delivery port of the compressor and the first conduit;

(b) directing hot compressed gases from the compressor through the first conduit serially through the condenser, the expansion valve, the evaporator and back to the suction port of the compressor to refrigerate the chamber containing said edible mixture;

(c) activating the switching means to establish fluid communication between the delivery port of the compressor and the by-pass conduit;

(d) directing hot compressed gases from the compressor through the by-pass conduit through the evaporator and back to the suction port of the compressor for a time and at a temperature to heat the contents of the chamber containing said edible mixture and components of the apparatus in contact therewith to a bacteria killing temperature; and

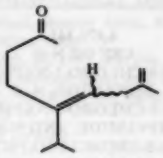
(e) repeating steps (a) and (b).

4,476,147
FLAVORING OF ALLIACEOUS-FLAVORED FOODSTUFFS

John B. Hall, Rumson; James M. Sanders, Eatontown, and James N. Siano, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 380,542, May 20, 1982, Pat. No. 4,433,695. This application Oct. 17, 1983, Ser. No. 542,477
Int. Cl.³ A23L *1/226*
U.S. Cl. 426—534 **1 Claim**

1. A process for augmenting or enhancing the aroma and taste of a alliaceous-flavored foodstuff comprising the step of adding to a alliaceous-flavored foodstuff 0.05 parts per million up to about 100 parts per million based on total composition of a mixture of cis and trans isomers of a compound having the structure:

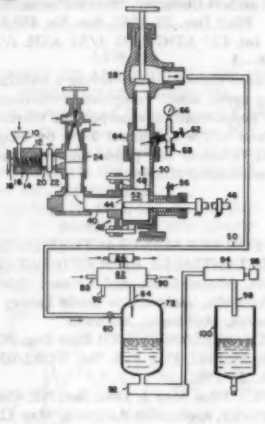


wherein the wavy lines indicate both cis and trans juxtaposition of the hydrogen and methallyl moieties about the carbon-carbon double bond.

4,476,148
METHOD OF PRODUCING A SLURRY FROM CROP PRODUCTS

Hubert Harris, Auburn, Ala., assignor to Peanut Research & Testing Labs, Inc., Albany, Ga.

Continuation of Ser. No. 322,972, Nov. 19, 1981, Pat. No. 4,362,759, which is a division of Ser. No. 80,581, Oct. 1, 1979, Pat. No. 4,302,111, which is a continuation-in-part of Ser. No. 57,741, Jul. 16, 1979, abandoned, which is a continuation of Ser. No. 899,368, Apr. 24, 1978, abandoned. This application Dec. 2, 1982, Ser. No. 446,414
The portion of the term of this patent subsequent to Dec. 2, 1999, has been disclaimed.
Int. Cl.³ A23L *1/36*
U.S. Cl. 426—629 **1 Claim**



1. The method of producing a slurry from crop product rich in protein, comprising the steps of

(a) continuously reducing said crop product to a paste and heating said paste to a temperature in the range of 145° to 170° F.,

(b) continuously forming said paste into a strand,

(c) continuosly delivering said strand along a first path,

(d) continuously delivering under pressure a flow of liquid along a second path generally intersecting said first path, whereby said strand is forced into and mixed with with said liquid to form a slurry at a temperature up to 320° F., the crop product content of said slurry being in the range of 1 to 65%,

(e) pumping said slurry along a dwell path for a time sufficient for the heat of said liquid in said slurry to penetrate said crop product in said slurry and at rate sufficient to maintain a relatively low pressure zone,

(f) flashing said slurry from said dwell path into a vacuum in order to rapidly cool said slurry, and

(g) heating said slurry to a sufficient temperature for a sufficient period of time to inactivate enzymes present in said slurry without damaging the proteins therein.

4,476,149

PROCESS FOR THE PRODUCTION OF AN ANALYSIS TEST STRIP

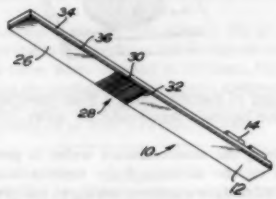
Werner Poppe, Bobenheim-Roxheim; Rainer van Rijekevorsel, Brühl; Uwe Ruppender, and Heinz Macho, both of Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,678

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133826

Int. Cl.³ G01N *33/52, 35/00*

U.S. Cl. 427—2 **9 Claims**



1. A process for the production of an analysis test strip having an elongated carrier with at least one test field fixed thereon, the process comprising: providing a band of carrier material sufficient for a plurality of test strips; batchwise producing test field material in an amount sufficient for the plurality of test strips and obtaining batch specific information for the quantitative evaluation of said test field material; in a chronologically separate step, fixing the test field material in the form of at least one narrow band onto a parallel-running substantially wider band of carrier material having a longitudinal axis and two longitudinal edges; cutting the carrier band, with the test field material band fixed thereon, transversely to the longitudinal axis thereof and into a plurality of test strips; and, prior to the cutting step and after obtaining said batch-specific information, applying a bar code running parallel to the longitudinal edges of the carrier band including said batch-specific information.

4,476,150

PROCESS OF AND APPARATUS FOR LASER ANNEALING OF FILM-LIKE SURFACE LAYERS OF CHEMICAL VAPOR DEPOSITED SILICON CARBIDE AND SILICON NITRIDE

Douglas N. Rose, Macomb, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 20, 1983, Ser. No. 496,366

Int. Cl.³ B23K *9/00*

U.S. Cl. 427—10 **1 Claim**

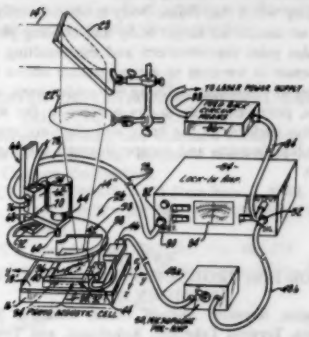
1. Annealing apparatus for relieving residual stress in a porous-free ceramic film on a ceramic workpiece, wherein the film material is selected from silicon nitride and silicon carbide:

said apparatus comprising a laser beam generator (**10**), means (**28**) for directing the generated beam onto the ceramic film to locally heat the film to a sufficient degree to effect an annealing operation thereon;

photoacoustic means for sensing the temperature of the heated film while said film is receiving the laser beam, said sensing means comprising a hollow open-bottomed cell (**34**) overlying the ceramic film in the path of the laser beam; said hollow cell comprising a window (**36**) operable to pass the beam onto the film, and a perimeter wall in close contact with the ceramic film surface to confine and trap a body of gas within the enclosed space between the ceramic film and aforementioned window,

and a microphone (**38**) exposed to the enclosed cell space for translating pressure changes in said space into electrical signals;

and means (**56**) for modulating the laser beam prior to its impingement on the aforementioned window; said modulating means comprising a rotary disc (**58**) having solid



areas operable to interrupt the beam and slot areas operable to pass the beam, whereby when the disc is rotating the beam is applied to the ceramic film as a series of laser pulses, for thus allowing the heated film to effect a pulse-type heating action on the gas trapped within said cell;

the volume of the enclosed cell space being sufficiently small that pressure changes associated with the gas-heating action cause the microphone to produce a periodically fluctuating electrical signal.

4,476,151

METHOD AND DEVICE FOR ATTACHING DISC-OR PLATE-SHAPED TARGET BODIES TO COOLING PLATES FOR SPUTTERING SYSTEMS

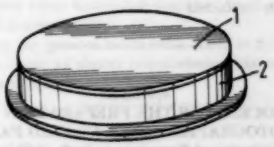
Hartmut Keller, Pöcking, and Aroon S. Roy, Petershausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 24, 1983, Ser. No. 526,120

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1982, 3233215

Int. Cl.³ B23K *31/02;* **B05D** *1/00*

U.S. Cl. 427—34 **2 Claims**



1. A device for attaching a target body composed of a select target material onto a cooling plate for sputtering systems through a solder joint between facing surfaces of said body and plate so that substantially no air bubbles, pores or oxide layers exist in the solder joint or on said facing surfaces, comprising:

a molten solder-impermeable frame body having an outer and an inner vertical surface defining a central recess adapted to receive an assembled target body and cooling plate;

said central recess having two spaced-apart inner side walls joined to one another by a shoulder wall;

an upper inner side wall of said recess defining a first opening of a size adapted to freely receive at least the solder joint area between an assembled target body and cooling plate so that a fluid-receiving gap is defined between outer edges of the solder joint and an inner peripheral surface of said first opening;

a lower inner side wall of said recess defining a second opening of a size adapted to snuggly mate in a molten solder-impermeable manner with outer peripheral side surfaces of said cooling plate;

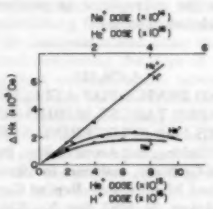
whereby when said frame body is operationally positioned on an assembled target body and cooling plate with the solder joint therebetween and the resulting assembly is exposed in vacuum to a temperature above the melting point of the solder defining the solder joint, any air bubbles, pores or oxide layers present in the solder or on facing surfaces of the body and plate are removed from the liquified gas and escape through the fluid-receiving gap.

4,476,152

METHOD FOR PRODUCTION OF MAGNETIC BUBBLE MEMORY DEVICE

Ryo Imura, Sayama; Tadashi Ikeda, Kodaira; Norio Ohta, Sayama; Teruaki Takeuchi, Kokubunji, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1983, Ser. No. 465,298
Claims priority, application Japan, Feb. 19, 1982, 57-24350
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **13 Claims**



1. A method for production of a magnetic bubble memory device comprising: implanting hydrogen ion twice or more at different acceleration voltages into predetermined portions of a magnetic film, and heat treating the magnetic film having hydrogen ion implanted therein.

4,476,153

PROCESS FOR THE PREPARATION OF PHOTOGRAPHIC RESIN-COATED PAPER

Masataka Kiritani, and Yasuzi Asao, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 17, 1982, Ser. No. 419,442
Claims priority, application Japan, Oct. 1, 1981, 56-156828
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—40 **6 Claims**

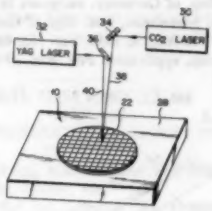
1. A process for the preparation of a photographic resin-coated paper which comprises subjecting paper sheet to corona discharge treatment and then coating the so treated paper sheet with polyolefin resin containing titanium dioxide powder coated with an alcohol selected from the group consisting of trimethylolethane, trimethylolpropane and 2,4-dihydroxy-2-methylpentane.

4,476,154

METHOD OF MANUFACTURING A GLASS PASSIVATION SEMICONDUCTOR DEVICE

Susumu Iesaka, Tokyo, and Shigenori Yakushiri, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 30, 1982, Ser. No. 373,731
Claims priority, application Japan, Jun. 29, 1981, 56-99599
Int. Cl.³ B05D *3/06, 5/12;* **B44C** *1/22;* **C03C** *15/00*
U.S. Cl. 427—53.1 **4 Claims**



1. A method of manufacturing a glass passivation semiconductor device having a semiconductor wafer, comprising the steps of:

mesa etching the semiconductor wafer to provide a mesa groove on the surface of the semiconductor wafer, a surface of said mesa groove having an end portion of a PN junction;

depositing a glass protective material in a powdery form on the surface of said mesa groove;

simultaneously radiating first and second laser beams onto said glass protective material, said first laser beam having a wavelength which is substantially absorbed in said glass protective material to melt said glass protective material, said second laser beam having a wavelength which is substantially absorbed in said semiconductor wafer and penetrates said melted glass protective material to heat the semiconductor surface of said mesa groove sufficiently for wetting said melted glass protective material to the semiconductor wafer.

4,476,155

HIGH VOLTAGE INSULATORS

Randolph G. Niemi, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 18, 1983, Ser. No. 485,812
Int. Cl.³ B05D *5/12;* **H01B** *17/00*
U.S. Cl. 427—58 **20 Claims**

1. A method of improving an electrical high voltage insulator comprising

(I) applying to a high voltage insulator whose surface has arc resistance of at least 750 minutes when measured according to ASTM D-2303 at 2.5 KV, a smooth, coherent, coating of a one package, room temperature curable silicone composition wherein the composition comprises the product obtained by mixing in the substantial absence of moisture,

(A) from 45 to 70 percent by weight of

(1) 100 parts by weight of polydimethylsiloxane fluid of the formula

$$Y(Me_2SiO)_aH$$

in which Y is methyl or hydroxyl radical, at least 85 percent of Y are hydroxyl radicals, a has an average value such that the viscosity is in the range of from 5 to 20 Pa-s at 23° C., and Me is methyl radical and,

(2) from 5 to 30 parts by weight of silane of the formula

$$R_bSi(ON{=}X)_{4-b}$$

in which R is selected from the group consisting of monovalent hydrocarbon radicals and monovalent halohydrocarbon radicals, X is selected from the group consisting of $R_2'C=$ and

radicals in which R' is selected from the group consisting of monovalent hydrocarbon radicals and monovalent halohydrocarbon radicals and R'' is selected from the group consisting of divalent hydrocarbon radicals and divalent halohydrocarbon radicals and b is an integer from 0 to 1 inclusive,

(B) from 30 to 55 percent by weight of aluminum hydroxide having an average particle size of less than 5 micrometers, and the sum of (A) and (B) being 100 percent,

(C) optionally, a non-reactive solvent, the product being storage stable in containers which exclude moisture, but which cures when exposed to moisture, then

(II) exposing the coating to atmospheric moisture for a time sufficient to cure the coating to produce a bonded, elastomeric coating of at least 0.25 mm thickness.

4,476,156
LOW TEMPERATURE PROCESS FOR OBTAINING THIN GLASS FILMS

C. Jeffrey Brinker, and Scott T. Reed, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 10, 1983, Ser. No. 473,845
Int. Cl.³ B05D 5/12; C03C 17/00
U.S. Cl. 427—82 **19 Claims**

1. A method for coating a substrate with a glass-like film comprising,

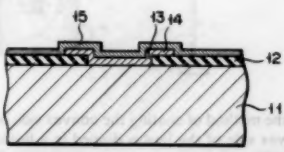
applying to the substrate, an aqueous alcoholic solution containing a polymeric network of partially hydrolyzed metal alkoxide into which network there is incorporated finely powdered glass, whereby there is achieved on the substrate a coherent and adherent initial film; and

heating said film to a temperature sufficient to melt said powdered glass component, thereby converting said initial film to a final densified film.

4,476,157
METHOD FOR MANUFACTURING SCHOTTKY BARRIER DIODE

Satoshi Shinozaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 28, 1982, Ser. No. 402,541
Claims priority, application Japan, Jul. 29, 1981, 56-117657; Aug. 10, 1981, 56-124124
Int. Cl.³ H01L 21/24
U.S. Cl. 427—84 **15 Claims**



1. A method for manufacturing a Schottky barrier diode, comprising the steps of:

forming an insulating film on a silicon substrate of one conductivity type, said insulating film having a hole partially exposing the surface of said silicon substrate;

forming a layer of polycrystalline silicon containing an impurity of said one conductivity type to cover a portion of said insulating film surrounding said hole, an inner wall of said hole and the exposed surface portion of said silicon substrate;

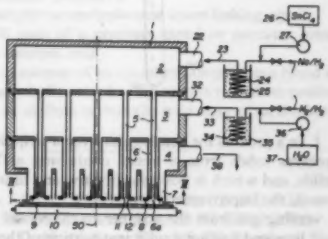
depositing a layer of a Schottky barrier formation metal to cover at least said polycrystalline silicon layer; and

alloying said polycrystalline silicon with said Schottky barrier formation metal to form a metal silicide layer which rectification-contacts said silicon substrate.

4,476,158
METHOD OF DEPOSITING A MINERAL OXIDE COATING ON A SUBSTRATE

Otto Baumberger, Carouge, and Reinhard Kalbskopf, Vordenwald, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/CH82/00032, § 371 Date Nov. 3, 1982, § 102(e) Date Nov. 3, 1982, PCT Pub. No. WO82/03093, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 4, 1982, Ser. No. 440,225
Claims priority, application Switzerland, Mar. 6, 1981, 1520/81
Int. Cl.³ B05D 5/06, 5/12
U.S. Cl. 427—109 **6 Claims**



1. In a method for coating a substrate with a layer of mineral material consisting of directing onto the said substrate heated to a high temperature gaseous blasts or flows of at least one reagent, the latter joining on the substrate or in the immediate vicinity of the latter and depositing thereon a product, in the form of a coating, resulting from the decomposition or reaction of said reagent, the improvement wherein the gaseous blasts are directed to meet at a point of contact by at least one of the steps:

(a) directing them towards each other at an angle greater than 35 degrees; and

(b) moving the gaseous blasts beforehand at different speeds so as to cause an almost instantaneous mixture of the said gaseous flows.

4,476,159
HIGH TEMPERATURE ADHESIVE SILICONE FOAM COMPOSITION, FOAM GENERATING SYSTEM AND METHOD OF GENERATING FOAM

Judith W. Mead, Peralta; Orelio J. Montoya, Albuquerque; Peter B. Rand, Albuquerque, and Vernon O. Willan, Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 21, 1983, Ser. No. 564,103
Int. Cl.³ C08J 9/30
U.S. Cl. 427—136 **21 Claims**

1. A silicone composition for preparing an adhesive foam consisting essentially of: (1) polydimethylsiloxane gel mixed

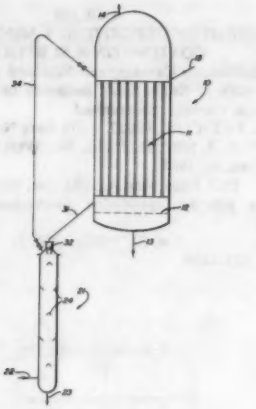
with a blend of 48.8% by weight of $CHClF_2$ and 51.2% by weight of $CClF_2$-CF_3 or (2) dimethylsilicone fluid mixed with dichlorodifluoromethane, in amounts effective to generate an adhesive foam.

4,476,160

FLUIDIZED BED SYSTEM

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Jun. 14, 1982, Ser. No. 387,922
Int. Cl.³ F27B *15/08*
U.S. Cl. 422—144 4 Claims



1. In a process for venting gas from a stripping vessel which receives solids from a vessel containing a fluidized bed of solids, and which is positioned below and independent of said vessel, the improvement comprising:

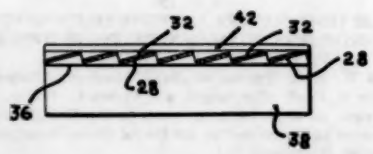
venting gas from the stripper to the vessel through a vent line; and passing a sufficient portion of the solids from the stripping vessel through at least a portion of the vent line to maintain the static head between the upper portion of the vessel and the upper portion of the stripper via said flow of gas and solids in the vent line.

4,476,161

METHOD OF PRODUCING A BURIED LONG PERIOD GRATING

Richard H. Pohle, Cupertino, and Robert C. Ohlmann, Palo Alto, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1983, Ser. No. 518,590
Int. Cl.³ G02B *5/18*
U.S. Cl. 427—162 9 Claims



1. A method of fabricating a buried long period grating comprising the steps of:

(a) providing a plurality of rectangular-shaped plates, each of said plates being made of a dielectric material and having oppositely disposed front and back surfaces and oppositely disposed top and bottom surfaces;

(b) optically polishing said front and back surfaces of each of said plates;

(c) clamping said plurality of plates together in a staggered relationship with said polished front and back surfaces of adjacent plates being in contact with each other;

(d) cutting said top and bottom surfaces of said plates along a first and second line, and forming first and second flat surfaces on opposite sides of each of said plates;

(e) polishing said first and second surfaces;

(f) separating said plates;

(g) securing said plurality of plates back together in a staggered relationship with said polished front and back surfaces of adjacent plates being in contact with each other, thereby forming a pair of saw-tooth faces;

(h) coating one of said saw-tooth faces with a reflective coating;

(i) cutting said plurality of plates into a first and a second section along a line parallel to said one saw-tooth face;

(j) bonding said one reflective coated, saw-tooth face of said first section to the other of said saw-tooth faces of said second section;

(k) cutting said bonded first and second sections along a line located in said second section adjacent said reflective coated, saw-tooth face of said first section in order to form a flat surface;

(l) polishing said flat surface;

(m) bonding said flat polished surface of said first section to a substrate;

(n) cutting said plurality of plates along a line located in said first section to form another flat surface;

(o) polishing said other flat surface; and

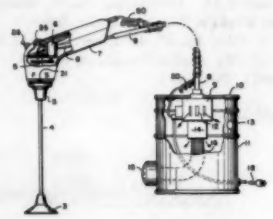
(p) coating said other flat surface with a highly reflective material.

4,476,162

METHOD FOR COATING LENSES

Jack W. Ireland, 180 N. Portage Path, Akron, Ohio 44303

Filed Apr. 30, 1982, Ser. No. 373,418
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.³ B05D *1/18*; G02B *1/10*
U.S. Cl. 427—164 4 Claims



1. In the method of coating the convex side of a lens wherein the convex side of the lens is dipped in a liquid coating material, is upwardly withdrawn to drain excess coating material therefrom, and is rotated to spread the coating material over the convex side of the lens as a thin uniform coating for drying, the improvement which comprises rotating the lens while dipped in the coating material.

4,476,163

METHOD OF MAKING CRUCIBLES FOR FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

Bernhard Lersmacher, Aachen, Fed. Rep. of Germany, and Ludovicus W. J. van Kollenburg, Veldhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,431

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949476

Int. Cl.³ C23C 11/00, 13/00

U.S. Cl. 427—249 10 Claims

1. A method for making crucibles for flameless atomic absorption spectroscopy comprising the steps of coating preforms of carbon with pyrolytic graphite in a reaction vessel by reactive deposition from gas phase, removing coated preforms from said reaction vessel after cooling from deposition temperature to room temperature, reintroducing said coated preforms into said reaction vessel so that individual coated preforms assume a different position, recoating said coated preforms with pyrolytic graphite in at least one additional step, and repeating said steps of removing, reintroducing and recoating until pyrolytic graphite coatings are produced on said preforms to a total thickness of 20 to 80 μm.

4,476,164

DEPOSITION OF IMPROVED SIC COATINGS ON CARBON-BASE MATERIALS

Richard D. Veltri, East Hartford, and Francis S. Galasso, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 24, 1982, Ser. No. 391,613

Int. Cl.³ B32B 9/00

U.S. Cl. 427—249 2 Claims

1. In the method of forming a SiC coating on a carbon-base material by a pack technique in which the article is surrounded by a mass of powder, which is capable of generating vapors of Si and Si compounds, and heated, the improvement which comprises: adding 0.5–3% boron to the pack material.

4,476,165

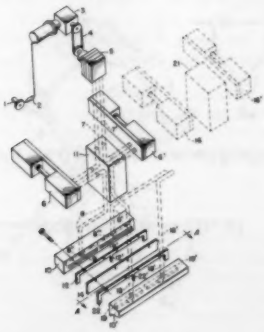
METHOD OF AND APPARATUS FOR MULTI-LAYER VISCOUS FLUID DEPOSITION SUCH AS FOR THE APPLICATION OF ADHESIVES AND THE LIKE

Frederic S. McIntyre, Wellesley, Mass., assignor to Acumeter Laboratories, Inc., Marlborough, Mass.

Filed Jun. 7, 1982, Ser. No. 385,683

Int. Cl.³ B05C 5/02

U.S. Cl. 427—258 12 Claims



1. A method of multi-layer viscous fluid deposition upon a moving web, that comprises, pumping fluid synchronously with the web speed transversely into intermediate inlet regions on one side of each of a pair of substantially parallel opposed narrow longitudinal slot cavities to expand the fluid longitudinally along each slot cavity laterally of the direction of movement of the web without substantial transverse expansion; projecting the longitudinally expanded fluid in the pair of slot cavities transversely outwardly toward one another and against opposite sides of baffle means that extends laterally of the direction of movement of the web, to divert the fluid to and through a pair of adjacent exit openings spaced along the direction of movement of the web and each displaced on the opposite side of its slot cavity from the inlet region, so that the fluid on opposite sides of the baffle means is directed in zig-zag paths towards one another and through the respective said spaced openings onto the moving web; and varying the width of the said openings along the direction of movement of the web to increase or decrease the velocity of the exiting fluid to adjust for the shearing action by the web for fluids of widely different viscosities in order to maintain a continuous and uniform coating deposition, without discontinuity, exiting separately at substantially the same time from both of said openings.

4,476,166

SILICONE RELEASE COATINGS AND INHIBITORS

Richard P. Eckberg, Round Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,420

Int. Cl.³ B05D 3/02; C09J 7/02; B32B 9/04; C08G 77/06

U.S. Cl. 427—387 42 Claims

1. A composition comprising:

(a) an olefinorganopolysiloxane or silanol end-stopped diorganopolysiloxane polymer,

(b) an organohydrogenpolysiloxane cross-linking agent,

(c) at least 50 ppm of a precious metal or precious metal containing catalyst, and

(d) an effective amount of an inhibitor comprising a blend of a dialkyl carboxylic ester having carbon to carbon unsaturation and an olefinic carboxylic acid ester of an aliphatic alcohol.

4,476,167

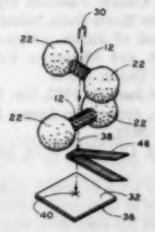
POMPON ARTICLES OF MANUFACTURE FOR PACKAGING DECORATION AND STATIONERY

Leon Duftler, c/o Duftler & Sons, Inc., 568-578 Broadway, New York, N.Y. 10012

Filed Jul. 6, 1982, Ser. No. 395,348

Int. Cl.³ D04D 7/06

U.S. Cl. 428—4 2 Claims



1. A pompon article of manufacture for package decoration comprising a first operative arrangement of a group of lengths of yarn having a first pair of staples affixed to and spaced one third the length inwardly of the opposite ends thereof to define outwardly of each said staple a pompon and defining between said spaced apart first pair of staples a connecting core for the remaining one third of the length thereof, a second separate similarly constituted operative arrangement of lengths of yarn having a second pair of staples affixed to and spaced one third the length inwardly of the opposite ends thereof to define outwardly of each said staple a pompon and defining between

said spaced apart second pair of staples a connecting core for the remaining one third the length thereof, a cooperating operative positioning of said first and second pompons with said connecting cores in a criss-crossed interfitting relation provided by said medial one third length thereof between said pompons, an adhesively-backed substrate for receiving in attached relation thereto said criss-crossed pompons, and a fifth staple disposed in engaged relation about said criss-crossed cores and projected through said substrate incident to achieving said attached relation thereto, whereby said pompons in response to the projection are closed towards each other and cover over said fifth staple and thereby effectively mask said fifth staple from view while the ends of said lengths of yarn beyond said staples of said first and second pairs of staples defining said pompons are fluffed so as to also effectively mask from view said first and second pairs of staples.

4,476,168

ARTIFICIAL-FLOWER-FORMING RIBBON

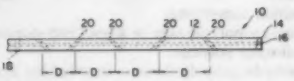
Ryuji Aoyama, Nagoya, Japan, assignor to Kabushiki Kaisha Aoyama, Nagoya, Japan

Continuation-in-part of Ser. No. 363,881, Mar. 31, 1982, abandoned. This application May 23, 1983, Ser. No. 496,933

Claims priority, application Japan, May 29, 1982, 57-79331[U]

Int. Cl.³ A41G *1/00*; D04D *7/10*

U.S. Cl. 428—4 **12 Claims**



1. An artificial-flower-forming ribbon comprising a pair of strips overlapped on each other; and at least a string placed longitudinally in the middle of said strips and therebetween, said string being joined to one ends of said strips at one end thereof, said strips being adhered to each other at a plurality of line areas respectively spaced apart in the longitudinal direction of said strips so as to permit relative movement of said strips and string, said line areas being inclined with respect to the widthwise direction of said strips, and the inclinations of said line areas being alternately reverse.

4,476,169

MULTILAYER GLASS STRUCTURE

Hiroshi Nishino, Osaka; Fumiichi Ogino, Kawanishi; Tetsuo Masuko, Shibata; Kunio Goto, Nakajo, and Masao Takahashi, Shiunjimachi, all of Japan, assignors to Takeda Chemical Industries, Ltd. and Mizusawa Kagaku Kogyo Kabushiki Kaisha, both of Osaka, Japan

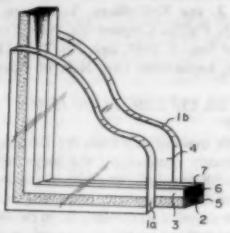
Filed Jun. 22, 1982, Ser. No. 390,932

Claims priority, application Japan, Jun. 23, 1981, 56-96031; May 24, 1982, 57-86587

Int. Cl.³ E06B *3/24*; B32B *5/14*

U.S. Cl. 428—34 **9 Claims**

1. A multilayer glass structure consisting of a plurality of glass sheets joined at their edge portions through spacers and sealed by a sealant between their edge portions and the outer surfaces of the spacers, that spacer which is located in at least one side of the glass sheets having an adsorbent filled therein; characterized in that said adsorbent comprises a combination of (1) a granular zeolite composed of a core of a synthetic zeolite/clay binder mixture containing the synthetic zeolite in an amount larger than its average content in the granular zeolite and a shell of a synthetic zeolite/clay binder mixture containing the clay binder in an amount larger than its average content in the granular zeolite, the core and the shell in said granular zeolite existing in a weight ratio of from 99:1 to 80:20, the core of said granular zeolite containing said synthetic zeolite and said clay binder in a weight ratio of from 90:10 to 60:40, the shell of said granular zeolite containing said clay binder and said synthetic zeolite in a weight ratio of from 95:5 to 30:70, said shell containing the clay binder in an amount at least 10% larger than the amount of the clay binder in said



core, said core and shell being calcined to harden the clay binder, with (2) granular activated carbon having on its surface 1 to 20% by weight, based on the activated carbon, of a coating of a synthetic resin latex.

4,476,170

POLY(ETHYLENE TEREPHTHALATE) ARTICLES AND METHOD

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 354,473, Mar. 3, 1982,. This application Dec. 2, 1983, Ser. No. 557,566

Int. Cl.³ B65D *23/00*

U.S. Cl. 428—35 **6 Claims**

1. A transparent hollow article of poly(ethylene terephthalate) having an inherent viscosity of at least 0.6 dl./gm., the body portion of said article being biaxially oriented and heat set and having a density over 1.392 g/cc and a volume shrinkage of less than about 6%.

4,476,171

FRAGRANCE RELEASING ARTICLES

Keinosuke Takeuchi, Kodoma, Japan, assignor to Hakugen Co., Ltd., Taito, Japan

Filed Feb. 18, 1983, Ser. No. 467,935

Claims priority, application Japan, Feb. 22, 1982, 57-24416; Feb. 22, 1982, 57-24417; Mar. 9, 1982, 57-37818

Int. Cl.³ A61K *7/46*; A61L *9/04*; B44F *1/06*

U.S. Cl. 428—38 **5 Claims**

1. A fragrance releasing article comprising a thermoplastic resin film with patterns thereon, surrounded by a frame body formed of thermoplastic or thermosetting resin, a fragrance releasing base comprising a transparent or semitransparent thermoplastic resin or a thermosetting resin, perfumes, said

film, frame body and fragrance base being integrally constituted so that said frame body is adhered to said film and said fragrance base adheres to said film and frame body.

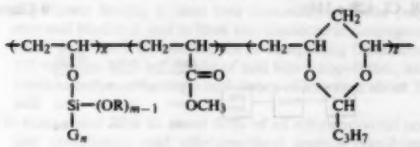
4,476,172

PELLICLE COMPOSITIONS AND PELLICLES THEREOF FOR PROJECTION PRINTING

Irl E. Ward, Easton, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

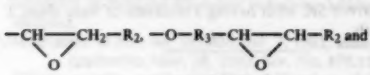
Filed Apr. 18, 1983, Ser. No. 486,082
Int. Cl.³ C08L *83/06*
U.S. Cl. 428—38 **20 Claims**

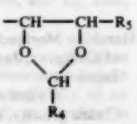
1. A pellicle film for use in projection printing comprising a film formed from a film forming polymer having the following structural unit:



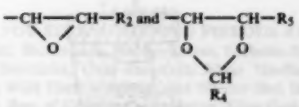
wherein x is $\leqq 0.12$, y is $\leqq 0.02$ and z is $\geqq 0.88$, R is methyl or ethyl, m is a whole integer of 1, 2 or 3, n is a whole integer equal to 4−m, and G is

wherein p is 0, 1, 2, 3 or 4 and Q is a member selected from the group consisting of —R_1, —OR_1,





when p is 1, 2, 3 or 4 and Q is selected from the group consisting of —R_1,



when p is equal to 0,

wherein R_1 is alkyl of 1 to 4 carbon atoms, R_2, R_4 and R_5 are selected from the group consisting of hydrogen and R_1, and R_3 is alkylene of 1 to 4 carbon atoms.

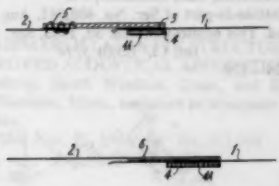
16. A pellicle for use in projection printing comprising a film of claim 1 mounted in a pellicle mounting ring.

4,476,173

JOINT OF TEXTILE MATERIALS

Albert Bachmann; Moritz Wälti, both of Mels, and Gottlieb Benz, Flums, all of Switzerland, assignors to Quikoton AG, Switzerland

Filed Apr. 15, 1982, Ser. No. 368,731
Claims priority, application Switzerland, Apr. 16, 1981, 2551/81; Apr. 16, 1981, 2552/81
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—57 **14 Claims**



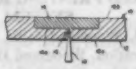
1. A tear, heat and corrosion resistant flexible joint between textile materials, especially between at least one sheet formed of a plurality of parallel yarns and another textile material, characterized by the fact that the joint comprises an adhesive bonding member, at least the surface of which that is subjected to thermal stress during use being shielded by a layer which rejects heat or absorbs heat.

4,476,174

COMPOSITE PLASTIC MAT AND METHOD OF FORMING SAME

Armando Carrera, Wood Dale, Ill., assignor to Tenex Corporation, Elk Grove, Ill.

Division of Ser. No. 307,651, Oct. 2, 1981, Pat. No. 4,448,625. This application Feb. 14, 1983, Ser. No. 466,055
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—58 **3 Claims**



1. An improved floor mat, comprising:

an elongated web means of semi-rigid, liquid-impervious, plastic material having a predetermined durometer rating on a Rockwell C scale sufficiently high to provide a durable wear surface for the mat during normal use;

plastic strip means embedded into said web means and laminated thereto while the web means was in molden condition to thereby form an integral web exclusive of any extraneous bonding means or medium, said strip means being formed of relatively flexible, liquid-impervious, plastic material having a predetermined durometer rating on a Rockwell A scale less than the durometer rating of said web means to provide said flexibility; and slit means in the side of said web means opposite from said strip means and extending through said web means to the adjacent side surface of said strip means, said slit means being disposed generally opposite and parallel to said strip means whereby said floor mat may be readily folded along

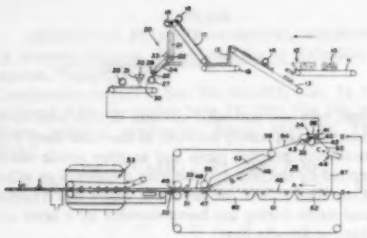
said slit means substantially 180° upon itself, the strip means being laminated integrally into said web means so that the adjacent outer, exposed sides of said web means and said strip means are substantially coplanar.

4,476,175

BUILDING MATERIALS COMPRISING NON-WOVEN WEBS

John S. Forry, Manor Township, Lancaster County, and John R. Garrick, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 408,061, Aug. 16, 1982, abandoned. This application Sep. 30, 1983, Ser. No. 537,834
Int. Cl.³ B32B 5/14
U.S. Cl. 428—170 32 Claims



1. A building board comprising a composite of a core material covered with non-woven webs, said board being obtained by

aerodynamically forming two generally uniform non-woven webs consisting essentially of organic binder and mineral wool;

disposing a core mixture comprising organic binder and filler between said webs;

consolidating said webs and said core mixture to provide a composite structure; and

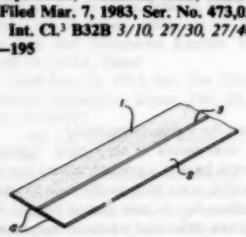
compressing and curing said structure.

4,476,176

MULTI-COLORED PRINTING RIBBON INK BARRIER SYSTEM

Eugene J. O'Neil, Woodland Hills, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Mar. 7, 1983, Ser. No. 473,026
Int. Cl.³ B32B 3/10, 27/30, 27/40
U.S. Cl. 428—195 4 Claims



1. A transfer ribbon having a plurality of elongated portions, each portion containing a dye-based ink, said portions defined at least in part by a thermoplastic resinous barrier which prevents the ink on said portions from interfusing, and wherein said barrier is formed by impregnating a portion of the ribbon with a composition consisting essentially of a heated, thermoplastic copolymer of ethylene and vinyl acetate and then cooling the impregnated thermoplastic copolymer thereby forming said barrier.

4,476,177

MAGNETIC TAPE HAVING A LEADER TAPE

Chiaki Mizuno, and Goro Akashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 20, 1981, Ser. No. 313,150
Claims priority, application Japan, Oct. 20, 1980, 55-146736
Int. Cl.³ B32B 5/16; G11B 5/78
U.S. Cl. 428—206 8 Claims

1. A tape comprising:

a magnetic recording tape portion; and

a leader tape portion connected at one end thereof, said leader tape comprising a base, and a cleaning layer coated on one side of said base, said cleaning layer consisting essentially of a binder and a particulate organic polymer having a size of 0.1 to 10μ, wherein said particulate organic polymer and said binder are mixed in a ratio of from 1/5 to 3/1 by weight, said leader tape portion having a light transmittance of 40 to 95%.

4,476,178

COMPOSITE SILICON CARBIDE COATINGS FOR CARBON-CARBON MATERIALS

Richard D. Veltri, East Hartford, and Francis S. Galasso, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 24, 1982, Ser. No. 391,612
Int. Cl.³ B32B 9/00
U.S. Cl. 428—215 9 Claims

1. A carbon-carbon composite article adapted to resist environmental degradation at elevated temperatures in oxidizing conditions, which comprises:

a. a carbon-carbon substrate;

b. a pack derived conversion coating integral with the substrate surface having a thickness of from about 0.5 to 30 mils consisting essentially of SiC;

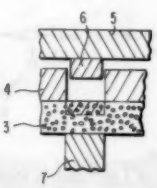
c. a CVD applied layer of SiC on the outer surface of the pack derived SiC layer having a thickness of from about 3 to 30 mils.

4,476,179

INK DONOR SHEET

Haruhiko Moriguchi; Toshiharu Inui, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 413,205
Claims priority, application Japan, Aug. 28, 1981, 56-134027
Int. Cl.³ B41M 5/26
U.S. Cl. 428—216 7 Claims



1. An ink donor sheet for transferring an image onto an adjacent recording sheet:

wherein the ink donor sheet has a maximum recording density and application of thermal energy beyond the point of maximum recording density results in an image of decreased density and comprises:

a porous base sheet; and

an ink layer on the porous base sheet, the ink layer comprising a binder, a coloring agent and a softening agent and being characterized by a temperature-dependent gradation such that it remains solid at ordinary temperatures, undergoes a sudden decrease in viscosity when heated to a certain temperature to transfer an image to the recording sheet, and undergoes a further gradual decrease in viscosity upon further heating to transfer an image of decreased density to the recording sheet, said ink donor sheet being capable of halftone reproduction.

4,476,180

NONBLOCKING ELASTOMERIC POLYMER BLENDS OF ABA BLOCK COPOLYMER AND ETHYLENE-VINYL ACETATE COPOLYMER

Andrew J. Wnuk, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 1, 1983, Ser. No. 462,824

Int. Cl.³ C08L *53/02, 23/08, 31/04*

U.S. Cl. 428—220 **23 Claims**

1. An elastomeric film comprising:

(a) from about 40% to about 80% of an elastomeric block copolymer having at least two monoalkenyl arene polymer end blocks A and at least one elastomeric conjugated diene mid block D, said blocks A comprising from about 8% to about 55% by weight of said block copolymer, said block copolymer having a melt index of less than about 10; and

(b) from about 20% to about 60% of an ethylene-vinyl acetate copolymer, said ethylene-vinyl acetate copolymer comprising from about 22% to about 33% vinyl acetate and having a melt index of less than about 0.6;

where said film is from about 0.03 mm to about 0.15 mm in thickness.

4,476,181

DELAMINATED VERMICULITE COATED ALUMINUM

Peter J. Briggs, Cheadle Hume; Kevin McAloon, Appleton Thorn, and Graham R. Rideal, Handbridge, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 281,036, Jul. 7, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,111

Claims priority, application United Kingdom, Jul. 11, 1980, 8022714

Int. Cl.³ B32B *1/00*

U.S. Cl. 428—220 **8 Claims**

1. An article which comprises a coated aluminum substrate characterized in that the coating consists essentially of an inorganic layer of chemically delaminated vermiculite in which the lamellae have a thickness of less than 0.5 micron and an aspect ratio of at least 100, and substantially all of the lamellae are of a size below 50 microns.

4,476,182

METHOD FOR STRENGTHENING FIBROUS ARTICLES

Herbert Fink, Bickenbach; Heiner Kniese, Seeheim-Jugenheim; Norbert Suetterlin, Ober-Ramstadt; Klaus Mueller, Gross-Bieberau; Willi Tilch, Reinheim, and Werner Siol, Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 5, 1983, Ser. No. 455,661

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202122

Int. Cl.³ B32B *27/08*; B05D *3/02*

U.S. Cl. 428—265 **18 Claims**

1. A method for reinforcing a fibrous article by applying to said article an aqueous dispersion of an acrylic resin consisting essentially of:

(a) at least 40 percent by weight of at least one member selected from the group consisting of alkyl acrylates and alkyl methacrylates having at least 4 carbon atoms in the alkyl; and

(b) 3 to 15 percent by weight of an hydroxyalkyl ester of an alpha, beta-unsaturated polymerizable carboxylic acid; and then drying the treated article at a temperature over 110° C.

4,476,183

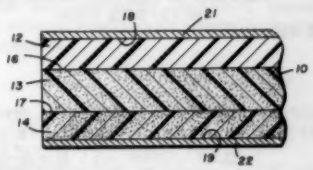
THERMOFORMABLE LAMINATE STRUCTURE WITH IMPROVED ACOUSTICAL ABSORPTION

James S. Holtrop, South Windsor, Conn., and Richard P. Maurer, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 21, 1983, Ser. No. 553,594

Int. Cl.³ B32B *5/32*

U.S. Cl. 428—286 **14 Claims**



1. A thermoformable laminate structure with improved acoustical absorption comprising:

a first layer of a foamed thermoplastic material;

a third layer of a foamed thermoplastic material;

a second layer intermediate said first and third layers, said second layer being a material having acoustical properties different from the acoustical properties of the thermoplastic material of said first and third layers;

at least a portion of said first and second and said second and third layers being adhesively bonded together; and

said first and third layers of thermoplastic material having an outer surface, said outer surface having a resin impregnated fabric bonded thereto.

6. The thermoformable laminate structure of claim 1 wherein said resin impregnated fabric comprises a non-woven fabric impregnated with a synthetic polymer resin.

4,476,184

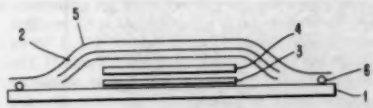
THERMALLY STABLE POLYSULFONE COMPOSITIONS FOR COMPOSITE STRUCTURES

Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 9, 1983, Ser. No. 521,629

Int. Cl.³ C08G *73/12*

U.S. Cl. 428—288 **20 Claims**



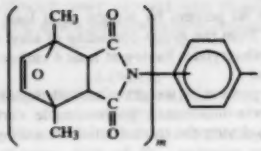
1. A cross-linkable polymer formed by reacting:

(1) 2 moles of A—OH

(2) n+1 moles of Z—R—Z and

(3) n moles of OH—R'—OH,

wherein A is



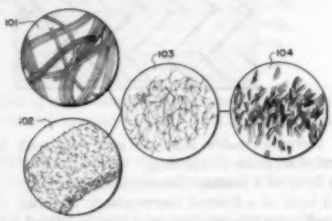
wherein m is 1 or 2, wherein Z is selected from the group consisting of fluorine, chlorine, and bromine, wherein R is an aromatic radical, wherein R' is an aromatic radical, and wherein n is selected so that said polymer has a molecular weight between about 1,000 and about 40,000.

4,476,185

BLOWABLE GLASS FIBER THERMAL INSULATION PRODUCT

Kevin S. Spittle, Gastonia, N.C., assignor to Spittle Industries, Inc., Belmont, N.C.

Filed Aug. 30, 1982, Ser. No. 412,533
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—290 **5 Claims**



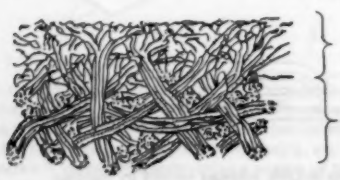
1. A blowable glass fiber thermal insulation product manufactured from unbonded fiberglass scrap material without the use of a binder or an adhesive, said product comprising loose, irregularly formed and separate clumps of entangled glass fiber material approximately 1 in. (2.5 cm.) in diameter and having a density of approximately 1 lb./cu./ft. (16 kg./cu.m.), and a thermal resistance value of 3.3 per inch (2.54 cm.) of thickness.

4,476,186

ULTRAFINE FIBER ENTANGLED SHEET AND METHOD OF PRODUCING THE SAME

Hiroyasu Kato, Kyoto, and Kenkichi Yagi, Otsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 479,970
Claims priority, application Japan, Mar. 31, 1982, 57-51119; May 6, 1982, 57-74582
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—290 **41 Claims**



1. An entangled nonwoven fabric comprising a portion (A) and a portion (B), said portion (A) being comprised of ultrafine fiber bundles, the ultrafine fibers of said bundles having a size not greater than about 0.5 denier, said fiber bundles of said portion (A) being entangled with one another; and said portion (B) comprising either ultrafine fibers or fine bundles of ultrafine fibers or both, each branching from said ultrafine fiber bundles (A), said fine bundles of portion (B) having a size less than said bundles of portion (A);

the ultrafine fibers of said portion (B) being entangled with one another;

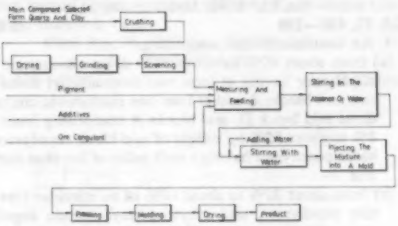
said portions (A) and (B) being nonuniformly distributed in the direction of fabric thickness and the degree of branching changing continuously along the boundary portion between said portion (A) and (B).

4,476,187

NON-SINTERED QUARTZ WARE AND METHOD FOR PRODUCING THE SAME

Michael Chang, 35, Lane 247, Ken Kou S. Rd., Taipei, Taiwan

Continuation-in-part of Ser. No. 321,990, Nov. 16, 1981, abandoned. This application May 9, 1983, Ser. No. 492,580
Int. Cl.³ B32B *5/16*; C04B *33/04*
U.S. Cl. 428—325 **2 Claims**



1. A non-sintered ceramic ware which is made by the process of: formulating a batch of raw materials consisting of powdered quartz and clay; adding an effective amount of ore coagulant of which the composition comprises $2CaO.SiO_2$, $3CaO.SiO_2$, $3CaO.Al_2O_3$, $4CaO.Al_2O_3.Fe_2O_3$ and MgO; blending the above components with an effective amount of water, and forming the blended material in a suitable mold; and pressing and drying the formed mass under low temperature heat.

4,476,188

COMPOSITIONS PRODUCING AMINOFUNCTIONAL SILICONE FOAMS AND COATINGS

John D. Blizzard, Bay City, and Terence J. Swihart, Essexville, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 565,072, Dec. 23, 1983, Pat. No. 4,460,712. This application Apr. 6, 1984, Ser. No. 597,639
Int. Cl.³ C08F *283/12*
U.S. Cl. 428—332 **9 Claims**

1. A non-foamed composition comprising a coating not thicker than 0.009 mm., said composition comprising, in combination

(A) the reaction product of:

(i) an organosilicon resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units, wherein R represents a monovalent hydrocarbon radical, and the ratio of $R_3SiO_{\frac{1}{2}}$ unit to $SiO_{4/2}$ units is from 0.6/1 to 0.9/1, and

(ii) a polyorganohydrogensiloxane; and

(B) an aminofunctional silicone fluid polymer having the general unit formula

$R'_aQ_bSiO_{(4-a-b)/2}$, wherein in said unit formula

R' is selected from the group consisting of monovalent hydrocarbon radicals, hydroxy radicals, and alkoxy radicals;

Q is an aminofunctional radical; the sum of the values of a and b is an average of at least 1;

there being, in said aminofunctional silicone fluid polymer, at least one Q radical.

4,476,189

COPOLYESTER PRIMED POLYESTER FILM

Robert G. Posey, Taylors, and Edwin C. Culbertson, Greer, both of S.C., assignors to American Hoechst Corporation, Somerville, N.J.

Filed May 16, 1983, Ser. No. 495,192

Int. Cl.[3] B32B 27/06

U.S. Cl. 428—336 14 Claims

1. An oriented self-supporting polyester film having a continuous copolyester primer coating on one or both sides thereof, said polyester film prepared by melt extruding a substantially amorphous polyester film and thereafter orienting the film by stretching in one or two directions and heat setting the film, said copolyester primer coating being applied to said film as an aqueous dispersion prior to stretching in one direction or subsequent to stretching in one direction but prior to stretching in a mutually perpendicular direction, said copolyester primer coating consisting essentially of the polyester condensation product of the following monomers or their polyester forming equivalents:

(A) about 60 to 75 mole percent of terephthalic acid;

(B) about 15 to 25 mole percent of at least one aliphatic dicarboxylic acid of the formula $HOOC(CH_2)_nCOOH$, wherein n ranges from about 1-11;

(C) greater than from about 6 up to about 15 mole percent of at least one sulfomonomer containing an alkali metal sulfonate group attached to a dicarboxylic aromatic nucleus, and

(D) stoichiometric quantities of about 100 mole percent of at least one copolymerizable aliphatic or cycloaliphatic alkylene glycol having about from 2 to 11 carbon atoms.

4,476,190

ADHESIVES FOR PREPASTED WALLCOVERINGS

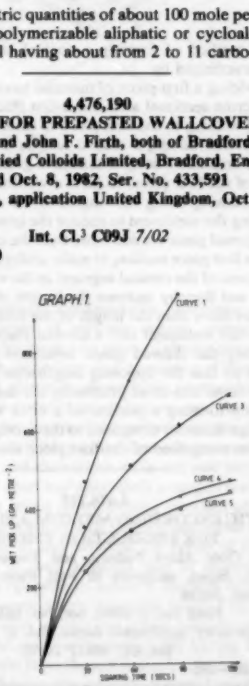
John B. Clarke, and John F. Firth, both of Bradford, England, assignors to Allied Colloids Limited, Bradford, England

Filed Oct. 8, 1982, Ser. No. 433,591

Claims priority, application United Kingdom, Oct. 15, 1981, 8131128

Int. Cl.[3] C09J 7/02

U.S. Cl. 428—350 18 Claims



1. A substantially non-aqueous composition comprising a blend of water insoluble but water swellable particles comprising anionic polymer formed from monomers selected from anionic monomers and blends of anionic monomers with nonionic monomers, and water soluble but water swellable particles comprising cationic polymer formed from monomers selected from cationic monomers and blends with nonionic monomers; wherein the anionic monomers are selected from acrylic acid, methacrylic acid and water soluble salts thereof, and the cationic monomers are selected from aminoalkyl acrylamides, aminoalkyl methacrylamides, aminoalkyl acrylates, aminoalkyl methacrylates and quaternized derivatives thereof; and wherein the nonionic monomers are selected from acrylamide and methacrylamide.

12. A prepasted wallcovering comprising a sheet substrate having a water wettable adhesive coating comprising a blend of water insoluble but water swellable particles comprising anionic polymer formed from monomers selected from anionic monomers and blends of anionic monomers with nonionic monomers, and water insoluble but water swellable particles comprising cationic polymer formed from monomers selected from cationic monomers and blends with nonionic monomers; wherein the anionic monomers are selected from acrylic acid methacrylic acid and water soluble salts thereof, and the cationic monomers are selected from aminoalkyl acryamides, aminoalkyl methacrylamides, aminoalkyl acrylates, aminoalkyl methacrylates and quaternized derivatives thereof; and wherein the nonionic monomers are selected from acrylamide and methacrylamide.

4,476,191

RESORCINOL-ALDEHYDE RESIN COMPOSITION FOR AN ADHESIVE SYSTEM TO BE APPLIED TO GLASS FIBERS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 321,971, Nov. 16, 1981, Pat. No. 4,393,189, which is a continuation of Ser. No. 163,355, Jun. 26, 1980, abandoned, which is a continuation-in-part of Ser. No. 956,473, Oct. 30, 1978, Pat. No. 4,314,050. This application Sep. 29, 1982, Ser. No. 426,592

Int. Cl.[3] C08G 8/22; C08L 61/12; B32B 25/02, 27/04

U.S. Cl. 428—378 9 Claims

1. A filamentary tire cord having thereon a dried residue of an adhesive coating composition having one or more elastomeric latexes and an improved flexible and tough resorcinolic or resorcinolic and phenolic aldehyde resin, comprising a thermoplastic, water soluble, resorcinol or resorcinol and a phenolic aldehyde resin that is a mixture of polymers having trimer polymer and dimer polymer and no higher non-water soluble oligomers produced by:

a. reacting to less than 10 percent completion a resorcinol or resorcinol and phenolic compound with an aldehyde in an amount of aldehyde to resorcinol or mixture of resorcinol and phenolic compound in mole ratio in the range of about 0.8 to about 1.5 and a pH in the range of about 3.5 to about 5.5 to limit formation of resorcinol and phenolic alcohols for a period of time equivalent to a period of time in the range of about 3 hours to about 10 hours at a temperature in the range of about 55° F. (13° C.) to about 90° F. (32° C.) to produce a resinous polymer mixture along with unreacted resorcinol or resorcinol and phenolic compound and aldehyde in the polymer mixture, and

b. continuing the resin reaction at a pH maintained above 7 to about 7.5 at a temperature in the range of 55° F. (13° C.) to 90° F. (32° C.) when the residence time is in the range of 0.75 hours to about 10 hours thereby producing a thermoplastic, water soluble, resorcinolic or resorcinolic and phenolic aldehyde resin mixture with improved flexibility and with toughness, since it has a substantial amount of trimer and dimer polymers without any higher oligomers and has only slight cross-linking and is capable of further reaction, and

wherein the resin mixture is present in an amount between about 5 and about 50 parts resin per 100 parts elastomeric latex solids.

4,476,192

ENAMELED WIRES HAVING RESISTANCE TO OVERLOAD AND PROCESS FOR PRODUCING THE SAME

Takeshi Imai; Naohiro Kako; Nobuyuki Asano; Shigeo Masuda, and Morihiko Katsuda, all of Aichi, Japan, assignors to Sumitomo Electric Industries, Ltd., Aichi, Japan

Filed Jul. 26, 1982, Ser. No. 401,576
Claims priority, application Japan, Jul. 24, 1981, 56-116648
Int. Cl.[3] B32B *9/00*; B05D *5/12*; H02G *3/00*
U.S. Cl. 428—391 13 Claims

1. A process for producing an enameled wire having resistance to overload, comprising the steps of:

providing an electric conductor wire;

providing a wire enamel coating material comprising a silicone resin having incorporated therein 50 to 200 parts by weight of particles of an inorganic tabular crystalline material per 100 parts by weight of the silicone resin, the particles having a maximum average particle size not greater than 80μ, an average not greater than 40μ and an average aspect ratio of between 30 and 100 and which react with the silicone resin at elevated temperatures to become a ceramic, the particles having been treated with an agent capable of increasing the miscibility of the particles with the silicone resin;

placing the enamel coating material in a die having a frustoconical shape;

applying the enamel coating material to the conductor wire to form a coating, wherein the coating formed by each cycle of application has a thickness of not more than 10μ, and wherein the tabular crystals in the coating are orientated parallel to the surface of the conductor wire; and

baking the coating to harden the coating on the wire conductor, providing a hard outer coating.

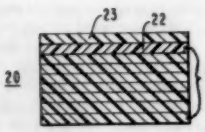
12. An enameled wire having resistance to overload which comprises an electric conductor having a baked product of a wire enamel coat, said wire enamel coat comprising a silicone resin having incorporated therein 50 to 200 phr of particles of an inorganic tabular crystalline material that have a maximum average particle size not greater than 80μ, an average not greater than 40μ and an average aspect ratio between 30 and 100 and which can react with the silicone resin at elevated temperatures to become a ceramic and which have been surface-treated with a coupling agent, a surface active agent or a coating agent, the tabular crystals in the wire enamel coat being orientated parallel to the surface of the conductor.

4,476,193

SULFUR CONTAINING LIGNIN MODIFIED ALKALINE EARTH TREATED PHENOLIC IMPREGNATING RESINS FOR CORE LAYERS OF HUMIDITY RESISTANT LAMINATES

Martin P. Seidel, Monroeville, and Timothy J. Fuller, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 14, 1982, Ser. No. 417,963
Int. Cl.[3] B32B *27/04*, *27/42*, *31/12*
U.S. Cl. 428—531 10 Claims



1. A moisture resistant, high pressure consolidated laminate, containing at least a core layer of a plurality of resin impregnated core sheets, the core impregnating resin comprising the cured admixture of:

(A) phenol,

(B) aldehyde,

(C) sulfur containing lignin, and

(D) an effective amount of catalytic reactant consisting essentially of:

(i) 50 wt. % to 100 wt. % of an alkaline-earth metal compound selected from the group consisting of calcium oxide, calcium hydroxide, barium oxide, barium hydroxide, hydrates thereof, and mixtures thereof, and

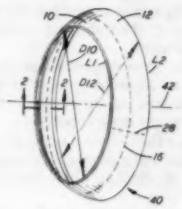
(ii) 0 wt. % to 50 wt. % of an alkali-metal compound, said core impregnating resin bonding the core sheets together.

4,476,194

CONTOUR FORMING CONICAL SHAPES

Harold C. Sanborn, Bolton, and James B. Griffith, Ellington, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 10, 1982, Ser. No. 440,673
Int. Cl.[3] B23K *31/08*
U.S. Cl. 428—585 6 Claims



1. The method of forming a conical segment from sheet metal characterized by

(a) providing a first piece of material having a first length, a first cross sectional area and a first thickness;

(b) butt welding to the first piece of material a second piece of material having a second length, a second cross sectional area and a second thickness greater than the thickness of the first piece, to form a weldment having a weld joint running along the lengths of the abutting pieces;

(c) rolling the weldment to reduce the cross sectional area of the second piece section more than the cross sectional area of the first piece section, to make uniform the cross section thickness of the conical segment in the vicinity of the weld joint and thereby increase the length of the second piece section more than the length of the first piece section and make the weldment into a skewed shape;

(d) rolling the skewed shape weldment to form it into a circle so that the opposing lengthwise ends of the weldment come into close proximity, the second piece section thereby forming a portion of a cone which is larger in average diameter compared to the average diameter of the portion comprised of the first piece section.

4,476,195

MAGNETIC RECORDING MEDIUM AND PROCESS FOR THE PRODUCTION THEREOF

Yoshihiro Ono; Akira Nabara, and Tomoaki Ikeda, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1980, Ser. No. 165,440
Claims priority, application Japan, Jul. 2, 1979, 54-82708
Int. Cl.[3] H01F *10/02*
U.S. Cl. 428—695 6 Claims

1. A magnetic recording medium comprising a non-magnetic support having thereon a magnetic recording layer comprising a layer of a simultaneously evaporated mixture consisting essentially of a ferromagnetic material and an organic lubricant, said organic lubricant being selected from the group

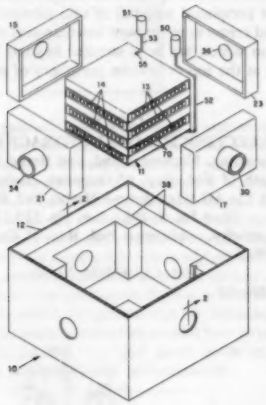
consisting of a paraffin wax, a higher fatty acid, an oxy fatty acid, a fatty acid amide, a fatty acid ester, a fatty alcohol, a metal soap and a mixture thereof.

4,476,196

SOLID OXIDE FUEL CELL HAVING MONOLITHIC CROSS FLOW CORE AND MANIFOLDING

Roger B. Poeppel, Glen Ellyn, and Joseph T. Dusek, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 12, 1983, Ser. No. 541,177
Int. Cl.³ H01M 8/10
U.S. Cl. 429—32 11 Claims



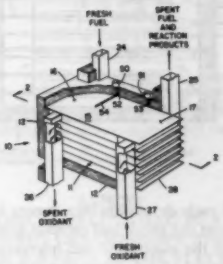
1. A fuel cell for electrochemically combining fuel and oxidant for generation of galvanic output, comprising the combination of a core having an array of electrolyte and interconnect walls, each electrolyte wall consisting of thin layers of cathode and anode materials respectively, sandwiching a thin layer of electrolyte material therebetween, each interconnect wall consisting of thin layers of the cathode and anode materials, respectively sandwiching a thin layer of interconnect material therebetween, said electrolyte walls and said interconnect walls being spaced apart and alternately arranged with the like cathode and anode layers on each being disposed adjacent to one another, spaced webs of such cathode and anode materials extended transverse to and between the layers of the corresponding material of each adjacent pair of electrolyte and interconnect walls operable to define a plurality of core passageways therebetween where the inside faces of the passageways are formed either of only the anode material or of only the cathode material, each core passageway having the anode material on the inside faces thereof being for the fuel and each core passageway having the cathode material on the inside faces thereof being for the oxidant, means to direct the fuel and the oxidant for flow through the respective anode and cathode passageway, and means to direct the galvanic output from the anode and cathode materials to an exterior circuit.

4,476,197

INTEGRAL MANIFOLDING STRUCTURE FOR FUEL CELL CORE HAVING PARALLEL GAS FLOW

Joseph E. Herceg, Naperville, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 12, 1983, Ser. No. 541,178
Int. Cl.³ H01M 8/10
U.S. Cl. 429—32 20 Claims



1. A fuel cell for electrochemically combining fuel and oxidant for generation of galvanic output, comprising the combination of a core having an array of electrolyte and interconnect walls, each electrolyte wall consisting of cathode and anode materials respectively sandwiching electrolyte material therebetween and each interconnect wall consisting of the cathode and anode materials respectively sandwiching interconnect material therebetween, the array providing that separate sections of each electrolyte wall are arranged between separate sections of adjacent pairs of interconnect walls operable to define a plurality of substantially parallel core passageways alternately arranged respectively where the inside faces thereof are formed either of only the anode or cathode material, each anode material passageway being for the fuel and each cathode material passageway being for the oxidant, means to direct the fuel and the oxidant for separate flow through each of its respective passageway, said last mentioned means including intermediate wall means extended from the electrolyte wall in the general direction of the passageways and each being spaced generally between the adjacent interconnect walls operable to define thereby separate end chambers open to the respective passageways, duct means for inputting the fuel and oxidant to the appropriate end chamber, and means to direct the galvanic output from the anode and cathode materials to an exterior circuit.

4,476,198

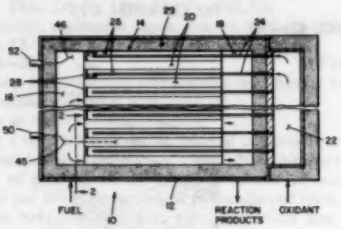
SOLID OXIDE FUEL CELL HAVING MONOLITHIC CORE

John P. Ackerman, Downers Grove, and John E. Young, Woodridge, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 12, 1983, Ser. No. 541,213
Int. Cl.³ H01M 8/10
U.S. Cl. 429—32 18 Claims

1. A fuel cell for electrochemically combining fuel and oxidant for generation of galvanic output, comprising the combination of a core having an array of electrolyte and interconnect walls, each electrolyte wall consisting of thin layers of cathode and anode materials respectively, sandwiching a thin layer of electrolyte material therebetween, each interconnect wall consisting of thin layers of the cathode and anode, respectively sandwiching a thin layer of interconnect material therebetween, whereby separate sections of said electrolyte wall are arranged between separate sections of adjacent interconnect walls operable to define a plurality of core passageways alternately arranged respectively where the inside faces thereof are

formed either of only the anode material or of only the cathode material, each core passageway having the anode material on the inside being for the fuel and each core passageway having the cathode material on the inside being for the oxidant, means to direct the fuel and the oxidant for flow through the respective anode and cathode passageway, means to direct the galvanic output from the anode and cathode materials to an exterior circuit, and the electrolyte and interconnect walls being substantially devoid of any composite inert material and the core being monolithic.



4,476,199

FUSED CARBONATE FUEL CELL

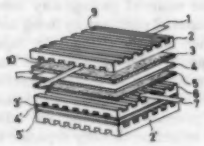
Masato Takeuchi, Katsuta; Hideo Okada; Sigeru Okabe, both of Hitachi; Hiroshi Tobita, Kitaibaraki, and Munehiko Tonami, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,255

Claims priority, application Japan, Jan. 29, 1982, 57-11516

Int. Cl.³ H01M *8/14*

U.S. Cl. 429—34 **4 Claims**



1. A fused carbonate type fuel cell comprising an electrolytic body holding an electrolyte therein which is arranged between an anode and a cathode, wherein electricity is electrochemically generated by feeding fuel and an oxidant to a fuel chamber arranged on the anode side and an oxidant chamber arranged on the cathode side, respectively, said electrolytic body comprising an electrolyte of alkali metal carbonate, an electrolyte-retaining member for retaining the electrolyte and an inorganic binder of an alkali metal metaphosphate represented by the formula MPO_3 wherein M designates an alkali metal.

4,476,200

GALVANIC CELL AND SEALING AND INSULATION MEMBER THEREFOR

Charles Markin; Ronald J. Book, both of Toronto; Michael J. Smith, and Marian Wiacek, both of Mississauga, all of Canada, assignors to Duracell Inc., Bethel, Conn.

Filed Dec. 2, 1982, Ser. No. 446,115

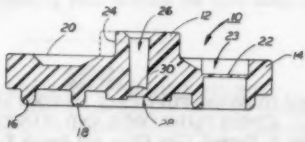
Claims priority, application Canada, Dec. 23, 1981, 393134

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—56 **8 Claims**

1. In combination, a cylindrical sealed galvanic cell, having an anode, a cathode, and a generally cylindrical can into which the principal components of the cell are placed, said can having a closed bottom end and an opened top end and said can having an inwardly extending bead formed near the top end thereof; and further comprising;

a sealing and insulating member at the top end of said cathode can, having a bottom peripheral edge seated on said bead, said member being held in sealing relationship to said can by a crimp formed at the top edge of said can, with said top edge of the can extending over the top periphery of said member;



said sealing and insulating member having a circular rib formed at its periphery at least in one of its top and bottom surfaces, wherein at least a first portion of the thickness of the peripheral material of said member being stressed by said crimp in an amount greater than the elastic limit of said material; and at least a second portion of the thickness of the peripheral material of said member being stressed by said crimp in an amount less than said elastic limit; said portion which has been stressed beyond the elastic limit being at the top or bottom periphery of said member.

4,476,201

ELECTROCHEMICAL STORAGE CELL

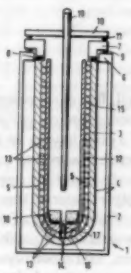
Detlev Repenning, Neckargemünd, and Bernd Lindner, Mannheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Jul. 8, 1983, Ser. No. 512,212

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225861

Int. Cl.³ H01M *10/50*

U.S. Cl. 429—62 **11 Claims**



1. An electrochemical storage cell based on alkali metal and chalcogen with an anode space and a cathode space which are separated from each other by an alkali ion-conducting solid electrolyte and are bounded at least in some regions by a metallic housing, a safety insert in the anode space into which safety insert the alkali metal is received, a safety gap between the surface of the safety insert and the surface of the electrolyte, a discharge opening in the safety insert for the discharge of alkali metal from the safety insert into the safety gap, the combination therewith of closing the discharge opening at a predetermined cell temperature comprising a fusible alloy part melting at said predetermined cell temperature and containing at least two metals selected from the group consisting of metals in Groups IB, IIA and IIIA, and a material in the discharge

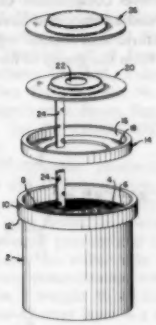
opening which on contact with said alloy in molten condition increases the melting point of the alloy causing the alloy to solidify and close off the discharge opening.

4,476,202

TWO-PIECE COVER-SEAL CONSTRUCTION FOR GALVANIC CELLS

John A. Wesner, Avon Lake, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 23, 1982, Ser. No. 391,421
Int. Cl.³ H01M *2/04, 2/36*
U.S. Cl. 429—94 **12 Claims**



1. A sealed galvanic cell comprising a container having a base, a sidewall and an open end and housing a first electrode in electrical contact with said container, a second electrode, a separator therebetween and an electrolyte therein in ionic contact with said first electrode and said second electrode; a cover assembly disposed at the open end of said container and in electrical contact with said second electrode; and a sealing gasket compressively disposed between said container sidewall and said cover assembly; the improvement wherein said cover assembly comprises an inner cover having at least one aperture therein through which electrolyte can be dispensed into said container and an outer electrically conductive cover which is positioned contiguously over said inner cover and which is secured within said gasket and said container.

4,476,203

LEAD-ACID BATTERY CELLS AND MANUFACTURING PROCESS THEREOF

Jack Robert, Palaiseau, and Jean Aizieu, Paris, both of France, assignors to Agence Nationale de Valorisation de la Recherche ANVAR, Neuilly Sur Seine, France

PCT No. PCT/FR79/00091, § 371 Date Jun. 4, 1980, § 102(e) Date Apr. 29, 1980, PCT Pub. No. WO80/00766, PCT Pub. Date Apr. 17, 1980
PCT Filed Oct. 4, 1979, Ser. No. 196,490
Claims priority, application France, Oct. 4, 1978, 78 28386
Int. Cl.³ H01M *2/18*
U.S. Cl. 429—139 **5 Claims**

1. A battery cell assembly for a lead acid storage battery including:

a box,

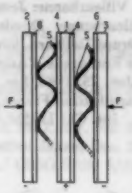
at least one battery cell assembly within said box,

means for applying onto said battery cell assembly a lateral pressure of at least 0.4 bar,

an electrolyte filling said box,

said battery cell assembly comprising at least one positive plate and at least one negative plate and interposed between said plates a plurality of successive separator elements including at least one corrugated perforated sheet of polyvinylchloride,

said positive plate having flat opposed lateral surfaces and being sandwiched between two flat microporous separator elements each extending all over said lateral surface of



said positive plate, the whole peripheral edges of said positive plate being covered with a protective material sealingly holding the active material of said plate.

4,476,204

ELECTROCHEMICAL CELL UTILIZING A MIXTURE OF PHOSPHORUS OXYCHLORIDE AND A LOW FREEZING SOLVENT AS THE ELECTROLYTE

James J. Auborn, Groton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 13, 1972, Ser. No. 305,811
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—196 **22 Claims**

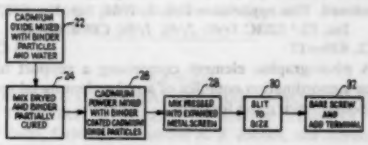
1. An electrochemical cell comprising an oxidizable active anode material; an active solid cathode material selected from the group consisting of halogens, metal halides, solid Group VI A elements and compounds thereof with metallic elements; and an electrolyte consisting essentially of an inorganic solvent system and a solute dissolved in said inorganic solvent system, said solvent system consisting essentially of a mixture of phosphorus oxychloride and a low freezing solvent selected from the group consisting of thiophosphoryl chloride, thionyl chloride, sulfuryl chloride, and monofluorophosphoryl dichloride; said inorganic solvent system being the sole solvent material in said electrolyte.

4,476,205

PRESSED CADMIUM ELECTRODE AND METHOD OF MAKING THE SAME

Claude J. Menard, 6384 Aspenwood Plz., Woodbury, Minn. 55125

Filed Apr. 11, 1983, Ser. No. 483,764
Int. Cl.³ H01M *4/24*
U.S. Cl. 429—217 **13 Claims**



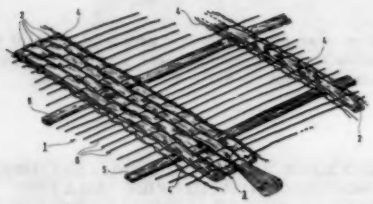
1. In a cadmium electrode for a rechargeable alkaline cell, said electrode comprising a rigid substrate having particle-receiving recesses therein into and upon which are applied a particulate mix of cadmium oxide particles and cadmium particles which constitute an active precharge anti-fading constituent of said mix, and held together by a binder, the improvement wherein said binder forms a coating on said cadmium oxide but not said cadmium particles, said cadmium particles being in conductive relation with the cadmium oxide particles and said substrate, and said particulate mix being compressed into and upon the recesses of said substrate.

4,476,206

FIBER REINFORCED GRID FOR A STORAGE CELL, AND METHOD OF MANUFACTURING IT

Jean-Claude Viala, Villeurbanne; Jean Bouix, Lyons; M'hamed El Morabit, Villeurbanne; Dominique Micheaux, Villette d'Anthon, and Gérard Dalibard, Sèvres, all of France, assignors to Compagnie Europeene d'Accumulateurs, Paris, France

Filed Jan. 25, 1983, Ser. No. 460,818
Claims priority, application France, Feb. 1, 1982, 82 01567
Int. Cl.³ H01M 4/72
U.S. Cl. 429—234 14 Claims



1. A support grid for a plate of an electric storage cell, wherein said grid comprise a loosely woven cloth containing two orthogonally intersecting sets of spaced apart bundles of conductive threads extending in the warp and weft directions, respectively, of the cloth, said bundles of conductive threads being embedded in a matrix of at least one metal selected from the group consisting of lead, copper, cadmium, and nickel to form a unitary group of orthogonal sets of conductive bars together with a current collector, and the cloth further containing bundles of non-conductive non-embedded threads extending in at least one of the warp and weft directions and serving to locate and to maintain in position the bundles of conductive threads relative to one another.

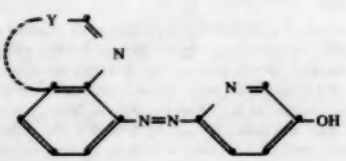
4,476,207

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE CYAN DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

James A. Reczek, Rochester, and James K. Elwood, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 504,694, Jun. 15, 1983, which is a division of Ser. No. 458,501, Jan. 17, 1983, Pat. No. 4,419,435, which is a continuation-in-part of Ser. No. 380,844, May 21, 1982, abandoned. This application Feb. 9, 1984, Ser. No. 578,720
Int. Cl.³ G03C 1/40, 7/40, 1/84; C09B 45/00
U.S. Cl. 430—17 3 Claims

1. A photographic element comprising a support having thereon a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

Y represents the atoms necessary to complete a 5- or 6-membered aromatic heterocyclic fused ring.

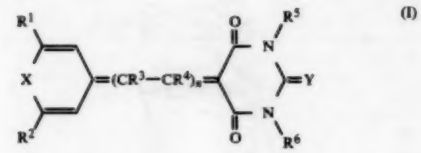
4,476,208

COMPOUNDS HAVING BARBITURIC ACID OR THIOBARBITURIC ACID RESIDUE, PHOTOCONDUCTIVE COMPOSITIONS AND ELECTROPHOTOGRAPHIC LIGHT SENSITIVE MATERIALS CONTAINING THE COMPOUNDS AS CHARGE GENERATING MATERIALS

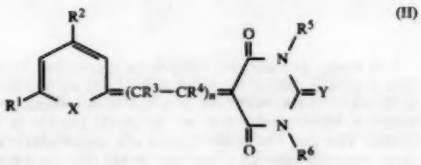
Seiji Horie; Junji Nakano, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1982, Ser. No. 452,654
Claims priority, application Japan, Dec. 23, 1981, 56-207246
Int. Cl.³ G03G 5/06
U.S. Cl. 430—58 11 Claims

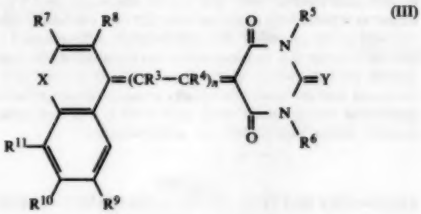
1. A photoconductive composition containing a charge transporting material and a compound having a barbituric acid residue or a thiobarbituric acid residue represented by a general formula selected from the group of formulae consisting of (I) to (IV);



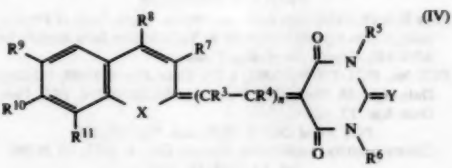
(I)



(II)



(III)



(IV)

wherein;

(i) n represents 0, 1 or 2,

(ii) X and Y, which may be the same or different, each represents an oxygen atom or a sulfur atom,

(iii) R^1 and R^2, which may be the same or different, each represents a hydrogen, an alkyl group having 1–4 carbon atoms, or a phenyl group; these groups may have a substituent,

(iv) R^3 and R^4, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aralkyl group, or an aryl group,

(v) R^5 and R^6, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aralkyl

group, or a phenyl group; these groups may have a substituent,

(vi) R^7 and R^8, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1–4 carbon atoms, an unsubstituted or substituted phenyl group, and

(vii) R^9, R^{10}, and R^{11}, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1–4 carbon atoms, a hydroxy group, an alkoxy group having 1–2 carbon atoms, an unsubstituted or substituted phenyl group, a nitro group, or a halogen atom.

4,476,209

SELENIUM-ANTIMONY ALLOY ELECTROPHOTOGRAPHIC PHOTORECEPTORS

Hiroyuki Moriguchi, Hachioji; Takeo Shimura, Ohtsuki; Tadashi Kaneko, Sagamihara; Hiroyuki Nomori, and Akira Nishiwaki, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,680

Claims priority, application Japan, Sep. 21, 1981, 56-147791

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—95 **7 Claims**

1. An electrophotographic photoreceptor comprising a conductive support and a photosensitive layer consisting of a vapor-deposited selenium-antimony alloy film formed thereon, said photosensitive layer having an average antimony concentration of 5 to 21 weight percent and consisting of a center layer and a skin layer on either side of said center layer wherein said antimony concentration within said center layer is maintained within 2 weight % of said average antimony concentration and said center layer is a microscopic region.

4,476,210

DYED STABILIZED LIQUID DEVELOPER AND METHOD FOR MAKING

Melvin D. Croucher, Oakville; James M. Duff, Mississauga; Michael L. Hair, Oakville; Kar P. Lok, Toronto, and Raymond W. Wong, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed May 27, 1983, Ser. No. 499,054

Int. Cl.³ G03G *9/12*

U.S. Cl. 430—114 **26 Claims**

1. A stable colored liquid developer comprising an insulating liquid dispersion medium having dispersed therein a marking particle comprising a thermoplastic resin core substantially insoluble in said dispersion medium, an amphipathic block or graft copolymeric steric stabilizer irreversibly chemically or physically anchored to said thermoplastic resin core, said steric stabilizer being soluble in said dispersion medium and a colored dye imbibed in the thermoplastic resin core, said dye being soluble in said thermoplastic resin core and insoluble in said dispersion medium.

4,476,211

PREPARATION OF ELECTROSTATOGRAPHIC TONER MATERIAL PROVIDED WITH SURFACE ELECTROCONDUCTIVITY

Noriyuki Hosoi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 8, 1982, Ser. No. 447,992

Claims priority, application Japan, Dec. 11, 1981, 56-198649

Int. Cl.³ G03G *9/16*

U.S. Cl. 430—137 **8 Claims**

1. A process for the preparation of an electrostatographic toner material comprising encapsulated toner particles having colored electroconductive powder affixed to their outer surface, which comprises encapsulating a pressure fixable adhesive core material containing a colorant and a magnetizable substance with a sheli material selected from the group consisting of polyurethane, polyamide, polyester, polysulfonamide, polyurea, epoxy resin and polysulfonates, in an aqueous medium to prepare encapsulated toner particles and spray-drying the thus prepared encapsulated toner particles together with the colored electroconductive powder.

4,476,212

PREPARATION OF ELECTROSTATOGRAPHIC TONER MATERIAL

Fujio Kukimi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1982, Ser. No. 452,502

Claims priority, application Japan, Dec. 25, 1981, 56-209278

Int. Cl.³ G03G *9/08, 9/10*

U.S. Cl. 430—137 **4 Claims**

1. In a process for the preparation of an electrostatographic toner material comprising encapsulating a core material containing colorant with a shell material selected from the group consisting of a melamine resin and a urea resin in an aqueous medium to prepare encapsulated toner particles and spray-drying the so prepared toner particles, the improvement in which the spray-drying of the toner particles is carried out in the presence of a cationic compound selected from the group consisting of a cationic surface active agent and a cationic polymer, and the spray-dried toner particles are then provided with a hydrophobic silica flow lubricant.

4,476,213

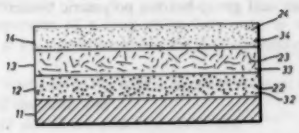
NON-AQUEOUS SILVER HALIDE DIFFUSION IMAGING SYSTEM

Paul C. Adair; Amy L. Burkholder; Homer G. Duda; Richard F. Wright, all of Chillicothe, and Mary M. Stanley, Waverly, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Dec. 10, 1982, Ser. No. 448,633

Int. Cl.³ G03C *5/54*

U.S. Cl. 430—229 **14 Claims**



1. A diffusion transfer imaging sheet, comprising:

a substrate;

a silver halide emulsion layer which includes a continuous phase that is nonionic;

a nucleating layer; and

means for separating the silver halide emulsion layer and nucleating layer which act as a water barrier and which are permeable to non-aqueous solutions.

4,476,214

OPTICAL INFORMATION DISK COMPRISING TELLURIUM, SELENIUM AND ANTIMONY

Pieter Zalm, Geldrop; Bernardus A. J. Jacobs, and Adriaan W. De Poorter, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,685

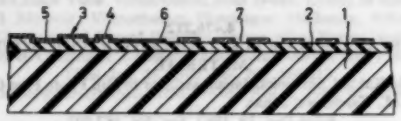
Claims priority, application Netherlands, Oct. 16, 1980, 8005693

Int. Cl.³ G03C *1/72*; G02B *27/22*

U.S. Cl. 430—270 **5 Claims**

1. An optical information disk in which information can be recorded and read optically and which comprises a substrate plate which, on at least one side, has an ablative recording layer comprising the elements tellurium, selenium and antimony, characterized in that the composition of the recording

layer satisfies the formula $Te_xSe_ySb_zS_q$ wherein x=55–85 at.%, y=13–30 at.%, z=1–12 at.% q=0–10 at.% and



$x+y+z+q=100$.

4,476,215

NEGATIVE-ACTING PHOTORESIST COMPOSITION

William L. Kausch, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 25, 1983, Ser. No. 554,886
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—281 **20 Claims**

1. A negative-acting photosensitive resist composition comprising:
(a) at least one polyfunctional acrylate monomer,
(b) an organic, polymeric, film-forming binder with more than one pendant acryloyl group pendant therefrom,
(c) a polyfunctional, thermally activated, acid group cross-linking agent,
(d) an active, photosensitive free-radical generator,
(e) a non-active, photosensitive free-radical generator, and
(f) an acid group-bearing polymeric binder.

4,476,216

METHOD FOR HIGH RESOLUTION LITHOGRAPHY

Eric Tobias, San Jose, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 289,476, Aug. 3, 1981, abandoned. This application Aug. 9, 1983, Ser. No. 521,941
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 **8 Claims**

1. In a method for performing high resolution lithography, the steps of:
disposing on a substructure having a surface layer to be patterned a layer of a positive electron beam resist material characterized by both substantial degradation sensitivity for incident electron beams and substantial instability of undegraded regions for a predetermined plasma etchant which attacks said surface layer;
exposing a prearranged pattern of regions of said resist layer to said electron beams to produce a corresponding pattern of degraded resist regions;
removing said pattern of degraded resist regions using a preselected developing solution to form a developed resist layer;
modifying said resist material to increase the stability thereof for said plasma etchant by exposing said developed resist layer to paid electron beam and baking said degraded resist layer; and
etching exposed regions of said surface layer using said plasma etchant.

4,476,217

SENSITIVE POSITIVE ELECTRON BEAM RESISTS

Richard B. Douglas, Crystal; Barbara J. Fure, Edina, and Juey H. Lai, Burnsville, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 376,343, May 10, 1982, abandoned. This application Feb. 13, 1984, Ser. No. 578,987
Int. Cl.³ B05D *3/02*; G03C *5/16, 5/24*
U.S. Cl. 430—326 **5 Claims**

1. A method of producing a sensitive positive radiation sensitive resist image comprising the steps of:
obtaining a solution of a radiation sensitive copolymer material comprising from about 55 to 80 mole percent methacrylic acid (MAA) and from about 20 to 45 mole percent t-butyl methacrylate (TBM), wherein the weight average molecular weight of the copolymer is equal to or greater than 250,000,
coating a substrate with the solution of MAA/TBM copolymer to form a thin polymeric film of said polymeric material thereon;
prebaking the coated substrate at a temperature equal to or greater than 200° but below the decomposition temperature of said polymer material;
exposing said polymeric film to ionizing radiation in a predetermined pattern;
developing said polymeric film.

3. The method according to any of claims 1 wherein said developing step further comprises spraying said exposed polymeric film on said substrate with a liquid solvent for said resist for a period of from about 10 seconds to 60 seconds.

4,476,218

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Masashi Ogawa; Kunio Ishigaki; Taku Nakamura, and Nobuyuki Iwasaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1982, Ser. No. 388,820
Claims priority, application Japan, Jun. 16, 1981, 56-92559
Int. Cl.³ G03C *1/76, 1/30*
U.S. Cl. 430—539 **12 Claims**

1. A silver halide light-sensitive photographic material, comprising:
a support; and
a plurality of layers on at least one side of the support wherein at least one of the layers is a light-sensitive silver halide emulsion layer, and further wherein a light-insensitive uppermost layer of the layers has a melting time greater than that of the light-sensitive silver halide emulsion layer, wherein the light-insensitive uppermost layer comprises gelatin hardened by a non-diffusible polymeric hardener.

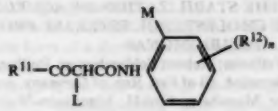
4,476,219

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kei Sakanoue; Shigeo Hirano; Takehiko Ueda, and Keiichi Adachi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1983, Ser. No. 474,606
Claims priority, application Japan, Mar. 11, 1982, 57-38803
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—542 **4 Claims**

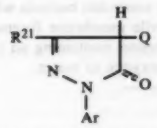
1. A silver halide color photographic material which contains a compound represented by the following general formula (I) and a high speed reaction type coupler represented by the following general formula (II), (V) or (VI):



(II)

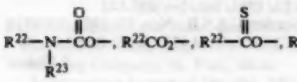
wherein R^{11} represents an alkyl group or an aryl group, each of which may be substituted; R^{12} represents a substituent which can be substituted for a hydrogen atom attached to the benzene ring; and n represents 1 or 2; M represents a halogen atom, an alkoxy group or an aryloxy group; and L represents a halogen atom, a —SR^{16} group in which R^{16} is an alkyl, aryl or acyl group or a heterocyclic residue, a —OR^{17} group in which R^{17} is an alkyl, aryl or acyl group or a heterocyclic residue, or a

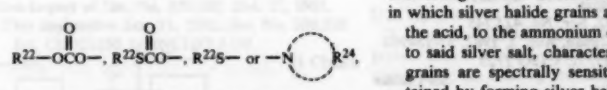
group in which R^{18} is the non-metallic atoms necessary to form a 5- or 6- membered ring together with —N<, wherein the constituent atoms of said ring include C, N, O and/or S and, further, such a ring may have a substituent,



(V)

wherein R^{21} represents an amino group, an acylamino group or a ureido group; Ar represents a phenyl group which may have one or more substituents; and Q represents a halogen atom, —SCN, —NCS, $R^{22}SO_2NH$—, $R^{22}CONH$—, $R^{22}OCONH$—, $R^{22}O$—, $R^{22}SO_3$—,

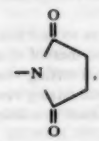




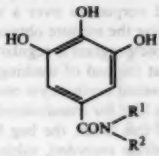
where R^{22} and R^{23}, which may be the same or different, each is an aliphatic hydrocarbon group, an aromatic hydrocarbon group or a heterocyclic ring residue, and each may have a substituent, wherein R^{23} may further be a hydrogen atom, and R^{24} is the non-metallic atoms necessary to form a 5- or 6-membered ring together with —N< whose constituent atoms include C, N, O and/or S, which ring may have a substituent,

$(A)_mZ$ (VI)

wherein A represents an image forming coupler residue which has a naphthol or a phenol nucleus; m represents 1 or 2; and Z represents a halogen atom, —SCN, —NCS, $—NHSO_2R^{31}$, $—NHCOR^{31}$,



$—OR^{31}$, $—OSO_2R^{31}$, $—OCONR^{31}R^{32}$, $—OCOR^{31}$, $—OCSR^{31}$, $—OCOCO—R^{31}$, $—OCSNR^{31}R^{32}$, $—OCOOR^{31}$, $—OCOSR^{31}$ or $—SR^{31}$, where R^{31} and R^{32}, which may be the same or different, each represents an aliphatic group, an aromatic group or a heterocyclic group, which each may have a substituent, and wherein R^{32} may further represent a hydrogen atom



(I)

wherein R^1 and R^2 each represents a hydrogen atom, a substituted or an unsubstituted aliphatic group, a substituted or an unsubstituted aromatic group, or a substituted or an unsubstituted heterocyclic group, and they may be the same group provided that they are not simultaneously hydrogen atoms and, further, they may combine with each other to form a ring.

4,476,220

SPECTRALLY SENSITIZED PHOTOTHERMOGRAPHIC MATERIALS AND PREPARATION THEREOF

Keith A. Penfound, Saffron Walden, England, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 1, 1983, Ser. No. 510,068

Claims priority, application United Kingdom, Jul. 29, 1982, 8221958

Int. Cl.³ G03C *1/02, 1/00*

U.S. Cl. 430—569 **20 Claims**

1. A process for preparing a photothermographic material which comprises:

forming a dispersion of a long chain fatty acid in water maintained at a temperature above the melting point of the acid,

converting at least part of the acid to an ammonium or alkali metal salt of the acid, and

converting said salt of the acid to a silver salt,

in which silver halide grains are added to the dispersion of the acid, to the ammonium or alkali metal salt thereof, or to said silver salt, characterized in that the silver halide grains are spectrally sensitized silver halide grains obtained by forming silver halide grains in the presence of one or more spectral sensitizing dyes.

4,476,221

PROTECTIVE SOLUTION FOR PRESERVING FUNCTIONAL CELLS

Odile B. Kane, Hoenheim; Eric George, Strasbourg; Chantal L. Tromp, Strasbourg, and Serge Goll, Strasbourg, all of France, assignors to Centre Regional De Transfusion Sanguine, Strasbourg, France

Filed Jul. 11, 1983, Ser. No. 512,748

Claims priority, application France, Jul. 9, 1982, 82 12324; Mar. 16, 1983, 83 04426

Int. Cl.³ A01N *1/02;* **A61K** *35/18*

U.S. Cl. 435—2 **2 Claims**

1. Protective solution for the preservation of thawed human red corpuscles, having the following composition:

Adenine	0.085 g ± 0.010
Glucose	5 g ± 0.5
Saccharose	47 g ± 2
Monosodium phosphate monohydrate	0.75 g ± 0.08
Disodium phosphate dihydrate	4 g ± 0.5
Sodium chloride	2.5 g ± 0.5

-continued

Distilled water qsp	1000 ml

the pH of the medium being equal to 7.40±0.10 and its osmolarity 320±10 mOsm.

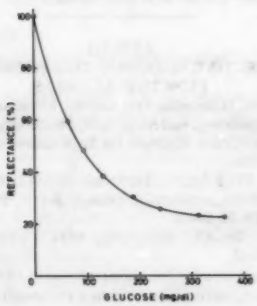
2. Process for the treatment of thawed human red corpuscles comprising, after thawing said red corpuscles over a water bath at 42° C. for 9 mins., and washing the mixture obtained in an automatic corpuscle washer whose program is regulated to obtain a mean hematocrit of 85% at the end of washing, followed by the introduction of the washed erythrocyte concentrate obtained in a plastic bag or the like, for transfusional use, by means of the transfer tubing of this latter, the bag being weighed and its volume of concentrate recorded, subjecting the bag to constant gentle agitation on the plate of an agitator for platelet concentrates, then adding, by means of the transfer tube of the bag, over 10 mins., a half volume of protective solution as in claim 1, welding the transfer tubing at 2 cm., 2.5 cm. and 3 cm. from the bag with the aid of a welder for medical plastic tubing, and finally continuing the agitation of the bag for 20 mins. to obtain blood ready for use which can be stored in a refrigerated cabinet or transported under refrigeration at 4° C.

4,476,222

TEST PIECE FOR QUANTITATIVE ANALYSIS OF SUBSTANCES IN BODY FLUIDS

Mikio Ohtani, Machida; Hiroshi Wada, Chigasaki, and Yuzo Kosaka, Tokyo, all of Japan, assignors to Eiken Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 423,745
Claims priority, application Japan, Aug. 2, 1982, 57-134953
Int. Cl.³ G01N *33/52*; C12Q *1/28*
U.S. Cl. 435—14 20 Claims



1. A test piece for quantitative analysis of a substance in body fluid, said test piece comprising: an absorbent carrier, reagents for measuring the substance, said reagents being contained in said absorbent carrier, and a coating on a surface of the absorbent carrier, said coating comprising polymethylmethacrylate and polyvinyl formal.

4,476,223

PROCESS FOR THE STABILIZATION OF AQUEOUS SOLUTIONS OF CHOLESTEROL ESTERASE FROM PSEUDOMONAS

Herbert Buschek, Weilheim; Helmut Schlumberger, Polling, and Joachim Siedel, Bernried, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Dec. 23, 1982, Ser. No. 452,690
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1982, 3200274
Int. Cl.³ C12N *9/96*, *9/18*; C12Q *1/60*
U.S. Cl. 435—188 10 Claims

1. Process for the stabilisation of an aqueous solution of cholesterol esterase from Pseudomonas, wherein the enzyme is dissolved in a phosphate-free buffer which contains 10 to 200 mMol/liter of magnesium ions.

4,476,224

MATERIAL AND METHOD FOR PROMOTING THE GROWTH OF ANAEROBIC BACTERIA

Howard I. Adler, 128 Indian La., Oak Ridge, Tenn. 37830

Filed May 10, 1982, Ser. No. 376,640
Int. Cl.³ C12N *1/20*
U.S. Cl. 435—253 10 Claims

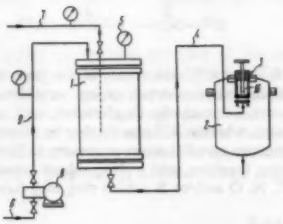
1. A nutrient medium for growing anaerobic bacteria which includes a hydrogen donor and sterile membrane fragments derived from bacteria having membranes containing an electron transfer system which reduces oxygen to water.

4,476,225

APPARATUS FOR CONTINUOUSLY DISINTEGRATING CELLS OF MICROORGANISMS

Alfred N. Grigorian; Andrei P. Kovalev, both of Moscow; Vitaly V. Lalov, Moskovskoi; Nikolai D. Makarov, Irkutsk, and Rady V. Katrush, Moscow, all of U.S.S.R., assignors to Vsesojuzny Nauchnoissledovatelsky Institut Sinteza Belkov, Moscow, U.S.S.R.

Filed Jul. 12, 1982, Ser. No. 397,122
Claims priority, application U.S.S.R., Nov. 13, 1981, 3339317
Int. Cl.³ C12M *1/00*; C12N *1/06*; A47J *19/06*; B02C *11/00*
U.S. Cl. 435—287 5 Claims



1. An apparatus for continuously disintegrating cells of microorganisms, comprising:

a mixing vessel for saturating cells of microorganisms in suspension with a gas under pressure;

a metering pump for suppling said cells of microorganisms in suspension to said mixing vessel;

a pipeline for feeding said cells in suspension to said mixing vessel, said pipeline connected at one end thereof to said metering pump and at the other end to said mixing vessel;

a pipeline for feeding a compressed gas to said mixing vessel;

a pipeline for communicating said mixing vessel to a disintegrating device;

an accumulating vessel for disintegrated material;

a disintegration device provided inside said accumulating

vessel for communicating said accumulating vessel with said mixing vessel;

a hollow body of said disintegration device which is made in the form of a sleeve having a bottom wall, side walls and an open end;

openings in the side walls of the sleeve, the interior of the sleeve communicating with the accumulating vessel through said openings;

an insert provided in the open end of the sleeve and connected to the sleeve;

a central passage of said insert communicating with said mixing vessel and with the interior of the sleeve;

a seat in said central passage of said insert, said seat comprising a throttle washer situated to receive the pointed end of a needle valve member; and

a needle valve member having its pointed end received in said throttle washer, the other end of the needle valve member being installed in the bottom wall of the sleeve.

4,476,226

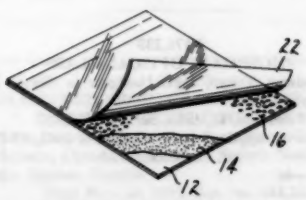
DRY CULTURE MEDIA

Paul E. Hansen, Lake Elmo, and Robert L. Nelson, Bloomington, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 228,893, Jan. 27, 1981, abandoned. This application Jan. 11, 1982, Ser. No. 338,559

Int. Cl.³ C12M *1/16*; C12Q *1/24*

U.S. Cl. 435—299 **33 Claims**



1. A device for growing microorganisms, comprising:

a body member comprising a self-supporting, waterproof substrate having upper and lower surfaces;

a layer of adhesive coated on said upper surface of said substrate, said adhesive being non-inhibitory to the growth of microorganisms; and a cold-water-soluble powder adhered uniformly to said adhesive, said powder comprising at least one ingredient selected from the group consisting of a gelling agent, one or more nutrients for growing microorganisms, and a mixture thereof;

said device being free of matrixes which adversely affect visualization and isolation of bacterial colonies.

4,476,227

COSMID CLONING VECTORS

Dean P. Taylor, King of Prussia, Pa., assignor to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Oct. 6, 1982, Ser. No. 433,062

Int. Cl.³ C12N *1/00, 15/00, 1/20*; C12P *21/00, 19/34*

U.S. Cl. 435—317 **6 Claims**

1. The cosmid cloning vector, pDPT6.

4,476,228

DETERMINATION OF UNSATURATED THYROXINE BINDING PROTEIN SITES USING FLUORESCENCE POLARIZATION TECHNIQUES

Roy F. Huchzermeier, Lake Villa, and Thomas G. Spring, Highland Park, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 8, 1982, Ser. No. 440,068

Int. Cl.³ G01N *3/52*; C07D *311/82*

U.S. Cl. 436—500 **10 Claims**

1. A method for determining unsaturated thyroxine binding protein sites in a sample containing thyroxine binding proteins, comprising: (a) treating the sample with a composition comprising a nonfluorescent surfactant in a buffered medium having a pH greater than 7.0; (b) contacting the treated sample with a fluorescent labeled tracer wherein said fluorescent labeled tracer has a preferential binding affinity for thyroxine binding globulin, thereby forming a complex between the thyroxine binding proteins and fluorescent labeled tracer; and (c) determining the amount of complex formed utilizing fluorescence polarization techniques, as a measure of the unsaturated thyroxine binding protein sites in the sample.

4,476,229

SUBSTITUTED CARBOXYFLUORESCEINS

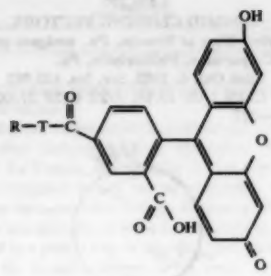
James R. Fino, Vernon Hills, and Curtis L. Kirkemo, Gurnee, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 8, 1982, Ser. No. 440,067

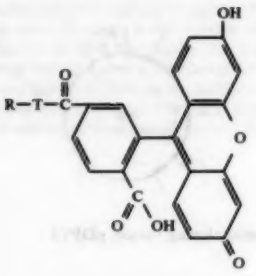
Int. Cl.³ G01N *33/52*; C07D *311/82*

U.S. Cl. 436—500 **11 Claims**

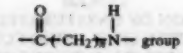
6. A method for determining ligands in a sample comprising intermixing with said sample a tracer of the formula:



or



wherein
T is a



wherein n is an integer of from 1 to 8; and,
R is a ligand-analog having at least one common epitope with a ligand so as to be specifically recognizable by a common antibody;
and biologically acceptable salts thereof; and an antibody capable of specifically recognizing said ligand and said tracer; and then determining the amount of tracer bound to antibody by fluorescence polarization techniques as a measure of the amount of ligand in the sample.

4,476,230
PROCESS FOR THE KINETIC DETERMINATION OF IMMUNOCOMPLEXES

Axel Sieber, Marburg an der Lahn, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

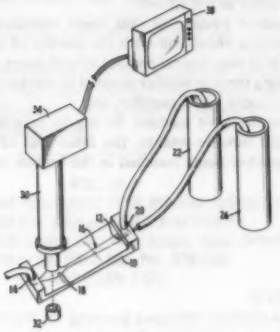
Filed Feb. 12, 1981, Ser. No. 233,985
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005417
Int. Cl.³ G01N *33/54*
U.S. Cl. 436—507 **1 Claim**

1. A method for detecting and determining the amount, in a liquid, of an immunocomplex of an immunoglobulin selected from the group consisting of immunoglobulins G, A, and M, which method comprises determining the rate at which said immunocomplex reacts with an antibody for the immunoglobulin present in said immunocomplex, and comparing this rate with the rate of reaction of said antibody with said immunoglobulin present in a liquid free of any immunocomplex of said immunoglobulin.

4,476,231
METHOD OF ANALYZING THE DISTRIBUTION OF A REAGENT BETWEEN PARTICLES AND LIQUID IN A SUSPENSION

Fred H. Deindoerfer, Northridge, and James R. Gangwer, Chatsworth, both of Calif., assignors to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed Jul. 22, 1981, Ser. No. 286,027
Int. Cl.³ G01N *33/54, 33/56*
U.S. Cl. 436—534 **12 Claims**



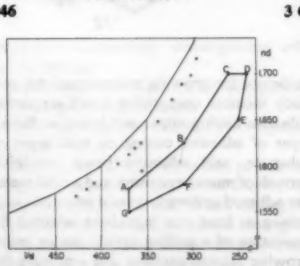
1. A method of analyzing the distribution of a dissolved immuno-specific reagent between particles and liquid in a suspension, wherein said distribution is caused by an immuno reaction and said reagent has a spectrally distinguishable label, said method comprising:
forming an image of said suspension; converting said image to an electrical signal representation;
storing said electrical signal representation in digital form;
processing said image in said digital form by locating the particles and by measuring the intensity of the spectrally distinguishable labels between the particles and the liquid;
determining the distribution of the labels between the particles and the liquid; and
wherein the distribution of said labels is respresentative of the distribution of the reagent between said particles and said liquid.

4,476,232
Patent Not Issued For This Number

4,476,233
PHOSPHATE OPTICAL GLASS

Hiroyuki Kodama, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 12, 1983, Ser. No. 531,410
Claims priority, application Japan, Oct. 6, 1982, 57-175668
Int. Cl.³ C03C *3/16*
U.S. Cl. 501—46 **3 Claims**



1. A phosphate optical glass having the optical constants lying in the area defined and enclosed by the seven points, A,

B, C, D, E, F and G as shown in the accompanying drawing and consisting essentially of, by weight percent,

40–55	P_2O_5,
20–40	R_2O,
(wherein R is Li, Na or K)	
8–20	TiO_2,
1—12	WO_3,
(providing that the percentage of WO_3 be not larger than TiO_2)	
0.1–4	As_2O_3,
0–7	MgO,
0–11	CaO,
0–12	BaO,
0–12	ZnO,
0–18	PbO,
0–20	Nb_2O_5,
0–10	Ta_2O_5,
0–3	SiO_2,
0–3	ZrO_2,
0–3	La_2O_3,
0–3	Y_2O_3 and
0–5	F.

4,476,234

REFRACTORY CEMENT

Cecil M. Jones, Worcester; Malcolm E. Washburn, and Louis J. Trostel, Jr., both of Princeton, all of Mass., assignors to Norton Company, Worcester, Mass.

Filed Aug. 12, 1983, Ser. No. 522,916
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—89 **17 Claims**

1. A refractory cement adapted to be fired in situ, said cement containing a major proportion of refractory grain, wherein the improvement comprises: a bond for said grain comprising a mixture of fine silica, a source of iron oxide, silicon powder, and a source of calcium oxide.

4,476,235

GREEN MOLDED PRODUCT CONTAINING ASBESTOS TAILINGS SUITABLE FOR FIRING

Jean-Pierre Chevalier-Buitel, and Jean-Pierre Drolet, both of Sherbrooke, Canada, assignors to Societe Nationale de Liamiante, Quebec, Canada

Filed Nov. 24, 1982, Ser. No. 444,333
Int. Cl.³ C04B *35/04*
U.S. Cl. 501—112 **9 Claims**

1. A green moulded product unit suitable for firing, consisting essentially of:

(a) at least 55% to 99% by weight of noncalcined asbestos tailings, the remainder consisting essentially of:

(b) at least one

(i) a metal chloride salt wherein the metal is selected from sodium, potassium, lithium, calcium, barium, magnesium, aluminum and mixtures thereof in an amount of from 1% to 15% by weight,

(ii) a natural aluminum silicate in an amount of from 1% to 30% by weight, and

(iii) mixtures of (i) and (ii).

4,476,236

METHOD FOR PRODUCING A CORDIERITE BODY

Kazuhiro Inoguchi; Mitsuru Asano; Kunio Okamoto, all of Okazaki, and Tomohiko Nakanishi, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 275,509, Jun. 19, 1981, abandoned. This application Jul. 8, 1983, Ser. No. 511,723
Claims priority, application Japan, Oct. 24, 1980, 55-149535
Int. Cl.³ C04B *35/04, 35/18*
U.S. Cl. 501—118 **4 Claims**

1. A method for producing a cordierite body comprising the sequential steps of:

(1) preparing a first batch material having an average particle diameter of from about 1 to about 50 microns consisting essentially in weight percent of 33.98 to 42.05% kaolin mineral particles, 14.74 to 18.24% raw talc particles, 14.74 to 18.25% fired talc particles

produced by delaminating pulverized, layered raw talc along (001) Plane into plate-shaped particles then firing said plate-shaped particles, and at least one of aluminum hydroxide or alumina, the batch material having substantially the same composition ratio as the theoretical composition ratio for cordierite;

(2) adding to the batch material prepared in step (1) from about 1 to about 20 weight percent of preformed cordierite particles having substantially the same composition as that of the batch material and having an average particle diameter of from about 1 to about 50 microns,

said preformed cordierite particles being prepared by mixing together and kneading a second batch material, consisting essentially of kaolin mineral particles, raw talc particles and at least one of aluminum hydroxide or alumina, into a slurry, forming said slurry into a formed body, drying and firing the formed body to form synthetic cordierite, then pulverizing the synthetic cordierite into cordierite particles;

(3) mixing and kneading the batch material and preformed cordierite particles together to form a slurry;

(4) anisostatically forming said batch into a formed body of the desired shape; and

(5) drying and firing said formed body,

the resulting cordierite body having a coefficient of thermal expansion which is nearly equal and is $\leqq 15.0\times10^{-7}$/°C. in the range of 25° to 1,000° C. in all directions.

4,476,237

SEPARATION OF TARS FROM CARBONYLATION REACTION MIXTURES

Richard V. Porcelli, Yonkers, N.Y., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed May 28, 1981, Ser. No. 267,960
Int. Cl.³ B01J *27/32, 23/96*; C07C *51/56, 67/37*
U.S. Cl. 502—31 **5 Claims**

1. A process for selective removal of high molecular weight

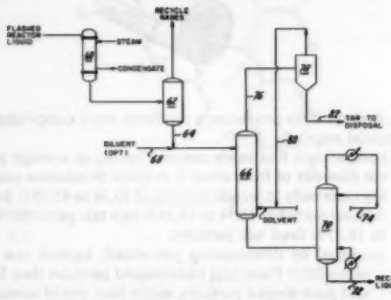
tars containing organic carbonyl and acetate functions produced in rhodium-lithium catalyzed carbonylation reactions in which methyl acetate or dimethyl ether are combined with carbon monoxide in the presence of iodides to form acetic anhydride or ethylidene diacetate comprising:

(a) flashing to a lower pressure at least a portion of rhodium-lithium catalyzed carbonylation reaction mixture and separating the resulting liquid and vapor fractions;

(b) concentrating the liquid portion of (a) by removing low-boiling compounds therefrom;

(c) adding to the concentrated liquid portion of (b) a diluent comprising the principal product of the carbonylation reaction;

(d) contacting the concentrated and diluted liquid fraction of (c) with a suitable liquid solvent substantially immiscible with the concentrated liquid of (b) capable of preferentially extracting the tars relative to the contained rhodium while removing a minimum of carbonylation products and by-products and comprising at least one member of the group consisting of alkanes, cycloalkanes, and solvents



belonging to Groups I, VIb, and VII as defined by Snyder, J. of Chromatography, 92, p. 223–230, 1974 and thereby permitting separation of said tars and the rhodium-lithium catalyst in said concentrated and diluted liquid fraction of (c);

(e) separating the tar-containing solvent from said liquid fraction after the contacting of (d);

(f) recovering said solvent from said tar-containing solvent of (e) and returning said solvent to step (d);

(g) disposing of the tar-containing residues remaining after the solvent has been recovered;

(h) distilling said liquid fraction remaining after step (e) to separate solvent contained therein; and

(i) recycling the solvent-free distilled liquid fraction of (h) including said diluent of (c) to the carbonylation reaction;

(j) returning solvent separated in (h) to the contacting step (d).

2. A process of claim 1 wherein said solvent is cyclohexane.

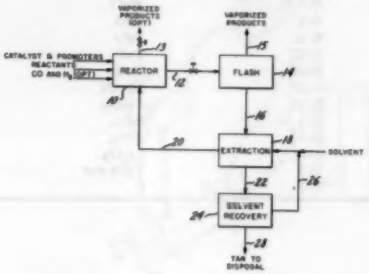
5. A process of claim 1 wherein the volume ratio of said solvent to said tar is between about 0.5 and 10.

4,476,238
SEPARATION OF TARS FROM CARBONYLATION REACTION MIXTURES

Burton J. Palmer, Upper Montclair, and Joseph V. Posluszny, Wharton, both of N.J., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed May 28, 1981, Ser. No. 267,961
Int. Cl.³ B01J *27/32, 23/96*; C07C *51/56, 67/37*
U.S. Cl. 502—31 **9 Claims**

1. A process for the selective removal of high molecular weight rhodium-containing tars containing organic carbonyl and acetate function produced in rhodium-lithium catalyzed carbonylation reactions in which methyl acetate or dimethyl ether are combined with carbon monoxide in the presence of iodides to form acetic anhydride or ethylidene diacetate comprising extracting said tars from carbonylation reaction mixtures or concentrates thereof with a liquid solvent substantially immiscible with said mixtures and concentrates and capable of preferentially dissolving said tars relative to the contained rhodium while removing a minimum of carbonylation products and by-products and comprising at least one member of the group consisting of alkanes, cycloalkanes, and solvents belonging to Groups I, VIb, and VII as defined by Snyder, *J.*



of Chromatography, 92, p. 223–230, 1974 and thereafter separating the tar-containing solvent from said mixtures and concentrates, recovering said solvent, discarding said tar, and recycling said separated mixtures or concentrates to said carbonylation reaction.

5. The process of claim 1 wherein said solvent is at least one member of the group consisting of alkanes, cycloalkanes, halogenated alkanes, and aromatic hydrocarbons.

9. The process of claim 1 wherein the volume ratio of said solvent to said tar is between about 0.5 and 10.

4,476,239
PRODUCTION OF FLUID CATALYTIC CRACKING CATALYSTS

Robert L. Chiang, and Julius Scherzer, both of Anaheim, Calif., assignors to Harshaw/Filtrol Partnership, Oakland, Calif.

Filed May 4, 1983, Ser. No. 491,466
Int. Cl.³ B01J *29/08*
U.S. Cl. 502—68 **7 Claims**

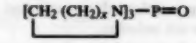
1. In the process of producing fluid catalytic cracking catalysts from a mixture of zeolite particles, clay, alumina-containing binder, and a silica source, said mixture being dispersed in an aqueous slurry and by drying the aqueous slurry, the improvement which comprises incorporating in the slurry a viscosity-reducing additive having the formula of $Al_2(OH)_5NO_3$ in an amount equivalent to from about 0.2 to about 2.5% by weight of the total solids content of the slurry, the percentage being based on the Al_2O_3 content of the additive, thus reducing the viscosity of the aqueous slurry from its additive-free level to a lower level, adding an additional quantity of fluid catalytic cracking catalyst forming constituents in the same weight ratio as used for making the additive-free slurry in an amount up to that required for reestablishing the viscosity of the slurry to its additive-free level and drying the aqueous slurry of increased solids content to form fluid catalytic cracking catalyst particles.

4,476,240
CATALYST SYSTEM CONTAINING AN ANIONIC INITIATOR BASED ON LITHIUM AND PHOSPHINE OXIDE MODIFIER

James E. Hall, Akron, Ohio, and Donald N. Schulz, Annandale, N.J., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jul. 1, 1982, Ser. No. 394,066
Int. Cl.³ C08F 4/48
U.S. Cl. 502—155 5 Claims

1. A catalyst system comprising
(a) an anionic initiator based on lithium, and
(b) a phosphine oxide modifier represented by the structural formula:



wherein x represents an integer of 3,4 or 5; wherein the molar ratio of (b) to (a) ranges from 0.05/1.0 to 10.0/1.0.

4,476,241
CATALYZING EMULSION PAPER RELEASE COMPOSITIONS

Anthony J. Dallavia, Jr., Clifton Park; Gordon T. Van Vleck, and Frank J. Traver, both of Troy, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 356,796, Mar. 10, 1982, Pat. No. 4,426,490. This application Oct. 14, 1983, Ser. No. 541,996
Int. Cl.³ B01J 31/12
U.S. Cl. 502—156 4 Claims

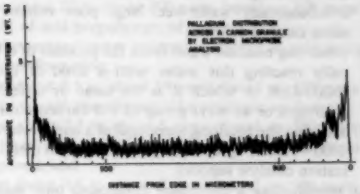
1. A dioctyl tin dineodeconate catalyst emulsion capable of promoting cross-polymerization of silanol-containing organosilicon compounds comprising, in intimate admixture:
(a) a major proportion of dioctyl tin dineodeconate, and
(b) minor proportions, independently, of (i) water and (ii) polyvinyl alcohol.

4,476,242
PROCESS FOR PREPARING PALLADIUM ON CARBON CATALYSTS FOR PURIFICATION OF CRUDE TEREPHTHALIC ACID

Imre Puskas, Wheaton, and Steven A. Cerefice, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 316,300, Oct. 29, 1981, abandoned. This application Jun. 23, 1983, Ser. No. 507,707
Int. Cl.³ B01J 23/44; C07C 51/42
U.S. Cl. 502—185 9 Claims

1. A method of making a catalyst for selectively hydrogenating 4-carboxybenzaldehyde in purification of terephthalic acid containing up to 10,000 ppm of 4-carboxybenzaldehyde in a standard laboratory test wherein 4-carboxybenzaldehyde content is decreased to less than 100 parts per million which consists essentially of reacting a palladium salt with a porous activated carbonaceous support material to reduce the said palladium salt to palladium metal crystallites, said porous activated carbonaceous support material consisting essentially of activated carbon granules having a surface area of at least 600 m^2/g, and said crystallites are predominantly less than 35Å in longitudinal measurement, which method comprises contacting said support in the absence of hydrogen with a nonaqueous solution of a palladium salt in an organic solvent which is inert to said support material and wherein said palladium salt is reduced to palladium metal crystallites by said activated support.



4. The method of claim 1 wherein said organic solvent contains up to 24 carbon atoms and is selected from the group consisting of an alcohol, a ketone, an ester, an aromatic hydrocarbon and a chlorinated hydrocarbon.

5. The method of claim 1 wherein said organic solvent is selected from the group consisting of methanol, ethanol, propanol, n-butanol, isobutanol, ethyl acetate, acetone and 2-butanone.

4,476,243
OLEFIN POLYMERIZATION CATALYST AND CATALYST SUPPORT

Robert A. Dombro, Palatine, Ill., assignor to Chemplex Company, Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 359,002, Mar. 17, 1982, abandoned, which is a continuation of Ser. No. 224,465, Jan. 12, 1981, abandoned, which is a division of Ser. No. 141,570, Apr. 18, 1980, Pat. No. 4,279,780. This application Jun. 7, 1983, Ser. No. 501,779
The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.
Int. Cl.³ B01J 21/06, 23/26
U.S. Cl. 502—236 16 Claims

1. An olefin polymerization catalyst prepared by the steps of:
a. reacting a zirconium compound of the formula

$M_4Zr(C_2O_4)_4.nH_2O$, where M is an alkali metal or ammonium ion and n equals 0 to 10, with a silicon compound of the type A_2SiO_3, where A is an alkali metal, in an aqueous solution at a pH of at least 11 and then adding an acidic material to a pH of about 5–9, to produce a hydrocogel;

b. aging said hydrocogel at a temperature between about ambient to 90° C. for at least one hour;

c. washing said hydrocogel of b with an aqueous liquid;

d. partially dehydrating the resulting washed hydrocogel of c by azeotropic distillation by mixing with a compound capable of forming an azeotrope with water or by washing the hydrocogel with a water miscible solvent to produce a substantially water-free, large pore volume zirconia-silica catalyst support;

e. removing residual water from the product of d by chemically reacting this water with a ketal of the formula $RC(OR)_2R$ in which R is the same or different and is hydrogen or an alkyl group of 1–5 carbon atoms;

f. calcining the resulting zerocogel at a temperature of about 1000°–1850° F. preparatory to its use as an olefin polymerization catalyst support;

g. introducting a chromium compound onto said calcined support of f; and

h. activating to produce an active polymerization catalyst.

4,476,244

Patent Not Issued For This Number

4,476,245

PREPARATIVE PROCESS FOR ALKALINE EARTH METAL, ALUMINUM-CONTAINING SPINELS

Kristine S. Siefert, Dolton, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Nov. 29, 1982, Ser. No. 445,306

Int. Cl.³ B01J *21/04, 23/02, 23/10*

U.S. Cl. 502—302 **19 Claims**

1. A process for the production of an alkaline earth metal, aluminum-containing spinel composition comprising:

(a) combining (a) an acidic aqueous solution and (b) a basic aqueous solution containing at least one aluminum component in which the aluminum is present as an anion to form a combined mass including a first liquid phase;

(b) combining said combined mass and an aqueous solution containing at least one alkaline earth metal component to form a further combined mass including a second liquid phase and an alkaline earth metal, aluminum-containing precipitate; and

(c) calcining said precipitate to form said alkaline earth metal, aluminum-containing spinel composition.

4,476,246

DOUBLY PROMOTED PLATINUM GROUP METAL CATALYSTS FOR EMISSION CONTROL

Gwan Kim, Olney, and Michael V. Ernest, Catonsville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 26, 1983, Ser. No. 461,119

Int. Cl.³ B01J *21/04, 23/10, 23/58*

U.S. Cl. 502—304 **27 Claims**

1. A method of making a catalyst suitable for use as a three-way catalyst for auto emission control comprising the steps of

(a) impregnating a calcined or activated alumina support with a cerous salt solution;

(b) air drying and air calcining the impregnated support to obtain a ceria impregnated support;

(c) impregnating the ceria impregnated support with solutions bearing platinum group metals in the form of sulfito complex ions and at least one alkali metal at a temperature below about 250° C. to form a catalyst;

(d) air drying the catalyst a temperature of about 100°–150° C; and

(e) activating the catalyst with hydrogen at a temperature of about 250°–550° C.

4,476,247

SYNTHESIS GAS CATALYST

Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 332,771, Dec. 21, 1981, Pat. No. 4,377,643. This application Jan. 12, 1983, Ser. No. 457,330

Int. Cl.³ B01J *23/62, 27/24, 23/58*

U.S. Cl. 502—325 **8 Claims**

1. A catalyst of the composition

$$A_aRu_bCu_cM_dN_zO_x$$

wherein A is an alkali metal,

wherein M is Rh, Ir, Pd, Pt or mixtures thereof and

wherein

a is about 0.02 to about 0.5,

b is about 0.5 to about 3,

c is about 0.5 to about 3,

d is about 0.05 to about 0.5,

z is a level of 0 to about 1 weight % and

x is the number of oxygens needed to fulfill the valence requirements of the other elements.

4,476,248

CRYSTALLIZATION OF IBUPROFEN

Roger E. Gordon, Portage, and Sanjay I. Amin, Oshtemo Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 470,820, Feb. 28, 1983, abandoned. This application Jul. 25, 1983, Ser. No. 517,116

Int. Cl.³ C07C *51/42*

U.S. Cl. 562—494 **17 Claims**

1. Ibuprofen crystallized from a saturated solution of ibuprofen in a liquid mixture containing at least about 10 percent by volume of solvent which has a hydrogen bonding parameter (δH) equal to or greater than 8 Hildebrand units.

4,476,249

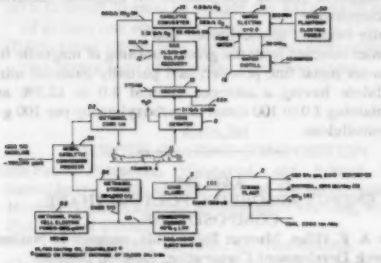
LOW COST METHOD FOR PRODUCING METHANOL UTILIZING OTEC PLANTSHIPS

William H. Avery, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 384,329, Jun. 2, 1982, abandoned. This application Jun. 8, 1983, Ser. No. 502,291

Int. Cl.³ C07C 29/15, 1/20

U.S. Cl. 518—703 10 Claims



1. method of producing low cost methanol from coal aboard an OTEC plant or plantship comprising the steps of:

providing a source of carbon to an OTEC plant or plantship;

obtaining carbon free hydrogen and electrolytic oxygen aboard said OTEC plant or plantship by the electrolysis of water using OTEC electric power;

processing said source of carbon with said electrolytic oxygen to obtain carbon monoxide;

reacting said carbon monoxide with said free hydrogen to obtain methanol.

4,476,250

CATALYTIC PROCESS FOR THE PRODUCTION OF METHANOL

Richard W. Joyner, Lightwater; John J. McCarroll, Camberley, and Stephen R. Tennison, Weybridge, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Aug. 12, 1983, Ser. No. 522,740

Claims priority, application United Kingdom, Aug. 14, 1982, 8223453

Int. Cl.³ C07C 27/06, 31/04

U.S. Cl. 518—715 7 Claims

1. A process for the production of methanol which comprises passing a feedstock containing hydrogen and carbon monoxide under conditions of temperature and pressure such that conversion is to methanol takes place over catalyst containing palladium metal dispersed on a support characterised in that

(1) the catalyst contains a promoter which is an element of Group IA or IIA of the Periodic Table or is a lanthanide, and

(2) the support is a graphite-containing carbon having

(a) a basal plane surface area of at least 100 m^2/g

(b) a ratio of BET surface area to basal plane surface area of not more than 5:1.

(c) a ratio of basal plane surface area to edge surface area of at least 10:1.

4,476,251

POLYURETHANE FOAM HAVING CLEANING AND GERMICIDAL ACTIVITIES

Alfred D. Cianciolo, West Haven, and Ellwood L. Lines, Jr., New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 1, 1983, Ser. No. 547,612

Int. Cl.³ C08G 18/14

U.S. Cl. 521—110 18 Claims

1. In a polyurethane foam prepared by mixing together

(a) a prepolymer of a hydrophilic oxyalkylene polyol which is capped with isocyanate groups, and

(b) from about 20 to about 100 parts, based on 100 parts by weight of said prepolymer, of water,

wherein the improvement comprises adding to said mixture prior to foam formation,

(c) from about 0.5 to about 10 parts, based on 100 parts by weight of said prepolymer, of a nonionic surfactant,

(d) from about 0.5 to about 5 parts, based on 100 parts by weight of said prepolymer, of a quaternary ammonium compound, and

(e) from about 0.5 to about 5 parts, based on 100 parts by weight of said prepolymer, of a silicon-based surfactant,

whereby there is obtained a fine cell, hydrophilic foam having cleaning and germicidal activities.

4,476,252

PROCESS FOR THE SYNTHESIS OF POLYMERS WITH LATERALLY LINKED POLYOXYALKYLENE CHAINS AND THEIR USE FOR THE PRODUCTION OF POLYURETHANES

Eberhard Esselborn, Essen, and Jürgen Fock, Düsseldorf, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,202

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241084

Int. Cl.³ C08G 18/14

U.S. Cl. 521—172 8 Claims

1. A process for the synthesis of polymers with laterally linked polyoxyalkylene chains by the free radical polymerization of polyoxyalkylene ethers with olefinic double bonds with other vinyl compounds, capable of copolymerizing comprising copolymerizing polyoxyalkylene ethers of allyl alcohol, methallyl alcohol, or mixtures thereof with vinyl esters of lower carboxylic acids or mixtures of vinyl esters of lower carboxylic acids with up to 50 mole percent of esters of acrylic or methacrylic acid.

4,476,253

PROCESS FOR THE PREPARATION OF POLYURETHANE ELASTOMERS USING DIOLS OF THE ANHYDRO-TETRITOL SERIES

Herbert Salzburg, Cologne; Holger Meyborg, Odenthal; Wilhelm Goyert, Leverkusen, and James M. Barnes, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 11, 1984, Ser. No. 570,045

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1983, 3302603

Int. Cl.³ C08G 18/14

U.S. Cl. 521—176 8 Claims

1. A process for the production of polyurethane elastomers comprising reacting:

(a) an organic polyisocyanate with

(b) a compound having at least two groups containing isocyanate-reactive hydrogen atoms and a molecular weight within the range of 400 to 10,000 and

(c) a 1,4-monoanhydro-tetritol.

4,476,254

LOW DENSITY, MODIFIED POLYIMIDE FOAMS AND METHODS OF MAKING SAME

John V. Long, 1756 E. Lexington Ave., El Cajon, Calif. 92021, and John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120

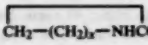
Division of Ser. No. 549,618, Nov. 7, 1983,. This application Mar. 7, 1984, Ser. No. 587,016

Int. Cl.³ C08J 9/32

U.S. Cl. 521—180 3 Claims

1. A low density, resilient, flame resistant modified polyimide foam product obtained according to the following method steps:

reacting an aromatic dianhydride with an effective amount of an oxoimine having the general formula



where "x" is an integer from 1 to 5, in a mole ratio of oxime to dianhydride up to about 1.5:1 to produce an N-substituted aliphatic imide;

dissolving said imide in a reactive solvent esterfying agent to exterify said imide;

adding thereto a diamine;

drying the resulting solution to produce a powdered prepolymer;

blending with said powdered prepolymer from about 0.05 to 10 wt. %, based on prepolymer weight, of a hydrated compound which is stable up to at least about 100° C.; and

heating the blended material to a selected foaming temperature of from about 120° C. to about 320° C. for a period of from about 10 to about 60 minutes.

4,476,255

PHOTOREACTIVE PLASTIC COMPOSITION AND ARTICLES DEGRADABLE BY ULTRAVIOLET RADIATION AND A PROCESS FOR THEIR MANUFACTURE

William J. Bailey, College Park, Md., and Lynn J. Taylor, Haslett, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 1, 1971, Ser. No. 194,502

Int. Cl.³ C08J 7/12

U.S. Cl. 523—125 9 Claims

1. A plastic composition degradable by ultraviolet radiation between about 200 and 400 angstroms, said composition consisting essentially of a photodegradable polyvinyl chloride having uniformly dispersed therein about 0.01–10 percent by weight of a substituted anthraquinone photosensitizer selected from the group consisting of 2-methylanthraquinone and 2-ethylanthraquinone.

4,476,256

FRICTION MATERIAL FOR BRAKE LININGS AND THE LIKE

Charles L. Hamermesh, Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 23, 1984, Ser. No. 573,261

Int. Cl.³ C08K 3/34, 3/10, 3/04

U.S. Cl. 523—152 12 Claims

1. A friction material comprising:

3–16% by weight polystilbazole resin; and

balance filler material.

4,476,257

MAGNETIC COATING COMPOSITION OF PARTIALLY OXIDIZED NITROCELLULOSE AND MAGNETIC POWDER

Teiichi Ishino; Ikuo Ueda, and Rikiya Kai, all of Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1983, Ser. No. 469,477

Int. Cl.³ G11B 5/70

U.S. Cl. 523—181 11 Claims

1. A magnetic coating composition for magnetic recording media, comprising:

partially oxidized nitrocellulose; and

a powder selected from the group consiting of magnetic fine powder metal fine powder, said partially oxidized nitrocellulose having a nitrogen content 8.0 to 12.5% and containing 2.0 to 100 mmol of carboxyl group per 100 g of nitrocellulose.

4,476,258

ENERGY ABSORBING POLYURETHANE COMPOSITIONS

Maurice A. F. Hiles, Munroe Falls, Ohio, assignor to National Research Development Corporation, London, England

Filed Mar. 30, 1983, Ser. No. 480,493

Int. Cl.³ C08L 75/08; C08G 18/38

U.S. Cl. 523—212 38 Claims

1. A polyurethane elastomer composition having a density of from about 0.4 to about 1 gm/cc, a compression set of less than about 5% and a recovery time of from about 10 to about 100 milliseconds.

4,476,259

THERMOSETTING COATING COMPOSITION—VI

Panagiotis I. Kordomenos, Mt. Clemens, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 565,801

Int. Cl.³ C08L 61/32, 63/02; C09D 3/52, 3/58

U.S. Cl. 523—400 22 Claims

1. An organic solvent based, thermosetting composition comprising:

(A) crosslinkable hydroxy functional epoxy ester resin of number average molecular weight (Mn) between about 1,000 and about 5,000, said resin comprising the reaction product of hydroxy functional secondary amine in approximately 1 to 1 equivalent ratio with chain extended diepoxide, said chain extended diepoxide comprising the rection product of diepoxide reactant substantially simultaneously with diphenol reactant and dicarboxylic acid reactant; and

(B) polyfunctional, hydroxy-reative crosslinking agent selected from aminoplast crosslinking agent, blocked polyisocyanate crosslinking agent comprising at least two isocyanate groups blocked by reaction with an active hydrogen bearing blocking agent, and a compatible mixture of any of them, said crosslinking agent being included in an amount such that at the cure temperature of the composition said crosslinking agent will provide between about 0.5 and about 1.6 hydroxy reactive groups per hydroxy group contributed by said epoxy ester resin.

4,476,260

ZINC RICH COATINGS

George A. Salensky, Whitehouse Station, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 26, 1983, Ser. No. 545,648

Int. Cl.³ C08K 3/08

U.S. Cl. 523—402 18 Claims

1. A zinc rich coating composition consisting essentially of:

(a) a polyether selected from the class consisting of thermoplastic polyhydroxyethers and thermosetting epoxy resins;

(b) about 350 to about 1450 parts by weight per 100 parts of polyether, of zinc pigment;
(c) about 0 to about 100 parts by weight per 100 parts of polyether, of aluminum trihydrate;
(d) about 0.1 to about 5 parts by weight per 100 parts of zinc pigment and aluminum trihydrate of an organosilane or its hydrolyzates, which silane possesses at least two to about three hydrolyzable groups bonded to the silicon thereof an an organic group which contains a polyalkylene oxide group;
(e) 0 to about 20 parts by weight per 100 parts of polyether of at least one suspending agent; and
(f) 0 to about 100 parts by weight per 100 parts of thermosetting epoxy resin of an epoxy hardening agent.

4,476,261
AQUEOUS COATING COMPOSITION

Hans-Peter Patzschke, Wuppertal, and Eduard Ehmann, Sprockhoevel, both of Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit beschraenkter Haftung, Wuppertal, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 563,966
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247756
Int. Cl.³ C09D *3/58, 3/66, 5/40*; C25D *9/02*
U.S. Cl. 523—402 **20 Claims**

1. An aqueous anodic electrophoretic coating composition comprising:
(A) 40 to 90% by weight polyesters containing carboxyl groups, having an acid number of 30 to 150, a hydroxyl number of 20 to 150 and a Patton alkyd constant of 0.9 to 1.2;
(B) 5 to 30% by weight blocked polyisocyanates;
(C) 5 to 40% by weight polymers containing glycidyl groups and free epoxy groups and
(D) 0 to 20% by weight hydroxyl group containing compounds selected from the group consisting of polyesters and acrylic resins.

4,476,262
AQUEOUS COATINGS COMPRISING IONIC POLYMER ESTER AND DILUENT POLYMER WITH REDUCED MONOMER RESIDUE AND METHOD OF PREPARATION

Shaw C. Chu, Belle Mead, and Arthur T. Spencer, New Providence, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,771
Int. Cl.³ C08J *3/06*; C08L *3/02, 3/10*
U.S. Cl. 523—412 **18 Claims**

1. A process for preparing an aqueous dispersion composition containing reduced extractable constituents which composition includes
A. an ionic polymer component derived from an aromatic epoxy resin containing 1,2-epoxy groups which has been reacted to render it self-dispersible in water;
B. a first addition polymer of a first monomer; in which the addition polymerization of said first polymer results in an undesirable residue of first monomer;
the improvement comprising reducing the residue of said first monomer by conducting an additional in situ polymerization step, in the presence of an aqueous dispersion of said first addition polymer containing residual first monomer, with a second monomer which is capable of copolymerizing with said first monomer and which results in a less undesirable monomer residue or a residue which is more easily removable than said first monomer.

9. The composition prepared by the process of claim 1.

4,476,263
ADHESION PROMOTERS FOR SANITARY CAN COATINGS

Phillip M. Owens, Strongsville, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Nov. 23, 1983, Ser. No. 554,687
Int. Cl.³ B65D *1/12*; B44D *1/50*; C09D *3/58, 5/40*
U.S. Cl. 523—426 **5 Claims**

1. A coating composition suitable for application to metal substrate such as aluminum and aluminum alloy without previous surface treatment thereof, which comprises an aqueous dispersion or solution of an epoxy-acrylic resin having sufficient functional groups capable of being crosslinked with a melamine or glycoluril type crosslinker, a crosslinking amount of said melamine or glycoluril and about 0.01 to about 2.0 weight percent of an adhesion promoter, said adhesion promoter being an alkali metal salt of a non-aromatic organic acid having at least two acid functional groups and one or more hydroxyl functional groups.

4,476,264
ORGANOPOLYSILOXANE COATING COMPOSITIONS

Frank D. Graziano, Lake Bluff, and Edmund J. Kuziemka, Naperville, both of Ill., assignors to Material Sciences Corporation, Elk Grove Village, Ill.

Continuation of Ser. No. 530,368, Sep. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 427,508, Sep. 29, 1982, Pat. No. 4,417,006, which is a continuation-in-part of Ser. No. 271,219, Jun. 8, 1981, Pat. No. 4,369,268. This application Feb. 27, 1984, Ser. No. 584,130
Int. Cl.³ C08K *5/15*
U.S. Cl. 523—435 **7 Claims**

1. A fast-curing resin coating composition comprising:
(i) 1–3 parts of a methylated melamine formaldehyde resin,
(ii) 10–25 parts of an epoxy resin,
(iii) 1–3 parts of a silicone fluid comprised of methylphenylsiloxanes, dimethylsiloxanes and diphenyldemethylsiloxanes,
(iv) 12–20 parts of an organopolysiloxane release resin prepared by
(a) agitating a mixture comprising (A) an organohalosilane blend consisting essentially of about 60 mole percent methyltrichlorosilane, about 35 mole percent phenyltrichlorosilane, and about 5 mole percent dimethyldichlorosilane, (B) water, (C) acetone, and (D) a water-immiscible organic solvent, wherein there is present by weight in said mixture per part by weight of (A), about 1.7 to about 10 parts of (B), about 0.2 to about 5 parts of (C), and about 0.3 to about 5 parts of (D); and
(b) separating the organic solvent solution of (F) from the resulting hydrolysis mixture of a step (i), wherein (F) is a silanol-containing organopolysiloxane resin having an average ratio of about 1.05 organic radicals per silicon atom,
(vi) a catalytic amount of an organometallic curing agent, in a
(vii) suitable solvent, all of the parts being parts by weight.

4,476,265
PIGMENTED COMPOSITIONS

Jennings P. Blackwell, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 25, 1983, Ser. No. 526,253
Int. Cl.³ C08K *3/04, 3/28, 3/40*; C08L *81/04*
U.S. Cl. 524—10 **23 Claims**

1. Pigmented poly(arylene sulfide) compositions comprising
(a) a major proportion of an arylene sulfide resin, and
(b) a minor but small finite effective amount ranging from about 0.25 to about 4 weight percent based on weight of total composition of a black carbonaceous pigment selected from the group consisting of finely divided bituminous coal, carbonized rice hulls, bone blacks having a

carbon content less than about 15 percent by weight, and micropulverized petroleum coke wherein said amount is sufficient to provide the black pigmentation desired with little or no deleterious effect on the mechanical properties, such as tensile and flexural strengths, of the resin.

4,476,266

THERMOPLASTIC RESIN COMPOSITIONS

Tetsuro Maeda; Susumu Ohoka; Masafumi Shingai, and Haruo Igawa, all of Ichihara, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,491
Claims priority, application Japan, Apr. 16, 1980, 55-49860
Int. Cl.³ C08L 55/02
U.S. Cl. 524—128 19 Claims

1. A thermoplastic resin composition obtained by mixing:

(A) a graft copolymer latex obtained by the copolymerization of a rubbery diene polymer latex with an aromatic vinyl monomer and an acrylic monomer with

(B) a copolymer latex obtained by the emulsion polymerization of an olefin monomer with a monomeric vinyl ester of fatty acid and, optionally, a vinyl monomer copolymerizable with them the copolymer having a glass transition temperature of −40° to 10° C. and a volume-average particle size of at least 0.5μ, in the form of a latex to precipitate a solid resin, in which composition, the amount of the solid resin (EVA) in component (B) is at least 1 wt. % based on the total solid resin and that of the solid rubbery diene polymer (BR) is at least 11 wt % and which composition satisfies the following relationship:

$$EVA < -3BR + 85$$

4,476,267

HIGH IMPACT POLYSTYRENE CONTAINING HALOPHENOXYALKYLSILANE FLAME RETARDANT

Henry J. Barda, North Brunswick, and Saadat Hussain, East Brunswick, both of N.J., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1983, Ser. No. 547,783
Int. Cl.³ C08L 25/06
U.S. Cl. 524—265 4 Claims

1. A flame retarded high impact polystyrene composition having improved Izod impact strength comprising a high impact polystyrene composition containing a flame retarding amount of a halophenoxyalkylsilane.

4,476,268

ACRYLONITRILE-BUTADIENE-STYRENE COMPOSITION CONTAINING HALOPHENOXYALKYLSILANE FLAME RETARDANT

Henry J. Barda, North Brunswick, and Saadat Hussain, East Brunswick, both of N.J., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1983, Ser. No. 547,782
Int. Cl.³ C08L 9/02
U.S. Cl. 524—265 4 Claims

1. A flame retarded acrylonitrile-butadiene-styrene composition having improved Izod impact strength and improved light stability which comprises an acrylonitrile-butadiene-styrene composition containing a flame retarding amount of a halophenoxyalkylsilane.

4,476,269

POLYMER DISPERSIONS OR EMULSIONS AS TEMPORARY SURFACE PROTECTANTS

Hans-Christoph Wilk, Neuss, and Jürgen Geke, Düsseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 450,185
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151372; European Pat. Off., Oct. 14, 1982, 82109491.9
Int. Cl.³ C08K 5/12
U.S. Cl. 524—297 21 Claims

1. An aqueous coating material for applying an easily removable protective coating to a surface consisting essentially of an aqueous dispersion or emulsion containing:

(a) a copolymer capable of forming a film at a temperature of 5° C. or above which contains acid groups or amino groups and is in the form of an aqueous dispersion or emulsion, wherein the acid groups are unsaturated mono and/or dicarboxylic acids and/or derivatives thereof, and the amino groups are esters of unsaturated carboxylic acids with alcohols containing tertiary amino groups and/or amides of unsaturated carboxylic acids with primary amines containing an additional tertiary amino group, and wherein the copolymer is substantially insoluble in water but becomes soluble therein when the acid groups or amino groups are in the form of salt;

(b) a non-solvent which is liquid at room temperature, of low volatility, immiscible with water, and insoluble in the copolymer in (a); and

(c) an emulsion or dispersion producing quantity of at least one nonionic emulsifying agent having an HLB-value of less than 10.

4,476,270

PROCESS FOR MAKING HIGH SOLIDS ACRYLIC DISPERSION LACQUER

Wallace R. Brasen, Chadds Ford, Pa.; Glenn E. Gerhardt, and Basil V. Gregorovich, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 278,847, Jun. 29, 1981, abandoned, and Ser. No. 157,455, Jun. 6, 1980, abandoned. This application Apr. 18, 1983, Ser. No. 485,752
Int. Cl.³ C08F 285/00
U.S. Cl. 524—364 8 Claims

1. A process for preparing a high solids acrylic dispersion lacquer coating composition having an acrylic polymer binder content of about 25–45% by weight in a nonaqueous medium; wherein the acrylic polymer binder consists essentially of

(1) 25–45% by weight, based on the weight of the binder, of Polymer A comprising about 90–99.5% by weight, based on the weight of Polymer A, of polymerized methyl methacrylate and about 0.1–5% by weight, based on the weight of Polymer A, of polymerized allyl methacrylate and 0.4–5% by weight, based the weight of Polymer A, of polymerized alkyl amino alkyl methacrylate and having a weight average molecular weight, measured by gel permeation chromatography, of about 90,000–130,000;

(2) 5–25% by weight, based on the weight of the binder, of Copolymer B comprising about 40–60% by weight, based on the weight of Copolymer B, of polymerized methyl methacrylate and 40–60% by weight, based on the weight of Copolymer B, of polymerized alkyl acrylate having 6–12 carbon atoms in the alkyl group and having a weight average molecular weight, measured as above, of about 20,000–40,000; and

(3) 40–60% by weight, based on the weight of the binder, of a graft copolymer of Polymer A which forms a backbone of the graft copolymer and Copolymer B attached to the backbone which forms side chains of the graft copolymer; and

wherein the nonaqueous medium comprises

(a) an aliphatic solvent which is at 25° C. a nonsolvent for Copolymer B; and

(b) a coalescing solvent which at 50° C. and above is a solvent for the binder and at 25° C. is a nonsolvent for the binder;

wherein the process comprises the following steps:

Step (1) adding about 50–70% by weight of the monomers for Polymer A and the backbone of the graft copolymer to a polymerization vessel with coalescing solvent, bridging solvent and low boiling solvent selected from the group of methanol or a blend of acetone and petroleum ether and maintaining a reflux temperature;

Step (2) adding about 0.1–2% by weight, based on the weight of Polymer A and the backbone of the graft copolymer, of an azo polymerization catalyst with coalescing solvent to the reaction mixture of step (1) and polymerizing said monomers;

Step (3) adding at a substantially uniform rate the remaining 30–50% by weight of the monomers for Polymer A and the backbone of the graft copolymer and a coalescing solvent and about 0.1–2% by weight, based on the total weight of the monomers for Polymer A and the backbone of the graft copolymer, of an azo polymerization catalyst while maintaining the reflux temperature and polymerizing said monomers;

Step (4) adding about 40–60% by weight of monomers of Copolymer B and the side chains of the graft copolymer and about 0.5–2% by weight, based on the weight of the above monomers, of a peroxy polymerization catalyst while maintaining the reflux temperature and polymerizing said monomers;

Step (5) adding at a substantially uniform rate the remaining 40–60% by weight of the monomers of Step (4) with the above same amount of peroxy polymerization catalyst while maintaining the reflux temperature and polymerization said monomers;

Step (6) adding at a substantially uniform rate, about 2–10% by weight, based on the weight of the monomers for Polymer A, Copolymer B and the graft copolymers, of methyl methacrylate monomer with about 0.1–1% by weight of azo polymerization catalyst and the above peroxy polymerization catalyst while maintaining the refux temperature and polymerizing said monomers;

Step (7) adding at a substantially uniform rate about 15–25% by weight, based on the weight of the resulting reaction mixture of the above steps, of an aliphatic hydrocarbon solvent which is a nonsolvent for Polymer A and the backbone of the graft copolymer; and

Step (8) adding about 5–10% by weight, based on the weight of the reaction mixture, of the aliphatic hydrocarbon solvent of Step (7) containing about 0.1–10% by weight, based on the weight of the solvent, of the peroxy polymerization catalyst and polymerizing any residual monomers and cooling the resulting composition to an ambient temperature.

4,476,271

AQUEOUS DISPERSION TYPE THERMOSETTING COATING COMPOSITION

Masafumi Kano, Nagaokakyo; Teruyuki Takahashi, Osaka, and Hiroshi Igarashi, Kyoto, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Japan

Continuation of Ser. No. 261,388, May 7, 1981, abandoned, which is a continuation of Ser. No. 133,738, Mar. 25, 1980, abandoned. This application Nov. 23, 1982, Ser. No. 443,865

Int. Cl.³ C08K *5/06*

U.S. Cl. 524—377 **10 Claims**

1. An aqueous dispersion type thermosetting coating composition consisting essentially of

(a) 50–70 Parts by weight of an aqueous medium,

(b) 50–30 parts by weight of thermosetting powdery resin particles dispersed in said aqueous medium, said resin particles having an average particle diameter of 50–50μ and a softening point of 30°–120° C. and containing therein at least one thermosetting resin selected from the group consisting of acrylic resin, polyester resin and epoxy resin and at least one one curing agent having cross-linkable functional groups that are operable to react with said thermosetting resin when said particles are heated, said curing agent being selected from the group consisting of blocked isocyanate compound, diepoxy compound and polycarboxylic acid, and

(c) 0.5–10 parts by weight of polyethylene glycol having an average molecular weight of 200–10,000 in said aqueous medium.

4,476,272

HIGH CLARITY, LOW HAZE POLYESTERS HAVING REDUCED INFRARED HEAT-UP TIMES

Brian W. Pengilly, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 351,841, Feb. 24, 1982, Pat. No. 4,408,004. This application Oct. 3, 1983, Ser. No. 538,681

The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.

Int. Cl.³ C08L *67/02*; C08K *3/04*

U.S. Cl. 524—398 **35 Claims**

1. A high clarity, low haze polyester comprising: a polyester, said polyester having a small amount of an infrared absorbing material therein wherein said infrared absorbing material is carbon black, wherein the amount of said carbon black present is from 0.1 to 10 parts by weight per million parts by weight of said polyester, wherein said carbon black has an average particle size of from 10 to 500 nanometers and wherein said high clarity, low haze polyester has a Hunter haze value of less than 4.0 as measured on a sample having a cross-sectional thickness of about 0.028 inch.

4,476,273

THERMOSETTING COMPOSITIONS COMPRISING CONJUGATED DIENE POLYMERS HAVING PENDANT UNSATURATED GROUPS AND CALCIUM CARBONATE

Guy Senatore, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 8, 1982, Ser. No. 440,063

Int. Cl.³ C08K *3/26*

U.S. Cl. 524—426 **18 Claims**

1. A thermosetting composition consisting essentially of:

(a) 100 parts by weight of a conjugated diene polymer containing a relatively high amount of pendant unsaturated groups;

(b) 0–100 parts by weight of an ethylenically unsaturated monomer;

(c) 2–1200 parts by weight calcium carbonate; and

(d) a properties-enhancing amount of at least one modifier which contains one or more —C═C—C(O)—O— linkages and which is selected from the group consisting of acid anhydrides, monoacids, and alkali metal or alkaline earth metal salts of monoacids.

4,476,274

LINEAR LOW DENSITY POLYETHYLENE IMPACT MODIFIER FOR THERMOPLASTIC POLYESTERS

Nan-I Liu, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 3, 1983, Ser. No. 454,930

Int. Cl.³ C08L *25/10, 67/02*; C08K *3/34, 3/40*

U.S. Cl. 524—445 **39 Claims**

1. A thermoplastic molding composition having improved impact strength comprising

(a) from about 5 to about 92% by weight of at least one high molecular weight polymer selected from the groups consisting essentially of (a) poly(ethylene terephthalate), (b) poly(1,4-butylene terephthalate), (c) a copolyester of (a) or (b), and (d) a blend of (a), (b), or (c) with an aromatic polycarbonate resin or any combination thereof, wherein

any one polymer comprises 0–100% of the polymer component;

(b) from about 3 to about 20% by weight of a linear low density polyethylene having a density of from about 0.89 to 0.96 grams/cc, and

(c) from about 5 to 50% by weight glass fibers.

4,476,275

METAL DODECYLBENZENESULFONATES AS PROCESSING AIDS FOR POLYCARBONATES

Brandford E. Giddings, Shaker Heights, and Richard J. Jorkasky, II, Maple Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jan. 10, 1983, Ser. No. 457,041

Int. Cl.³ C08G 63/62

U.S. Cl. 525—462 18 Claims

1. A process for improving the processability of polycarbonates consisting essentially of contacting a polycarbonate with a metal salt of dodecylbenzenesulfonic acid in an amount sufficient to decrease the melt viscosity of the polycarbonate without a substantial loss in impact strength.

4,476,276

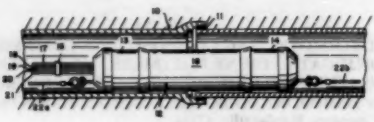
LATEX-REINFORCED POLYURETHANE SEWER SEALING COMPOSITION

Alton J. Gasper, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 51,878, Jun. 25, 1979, Pat. No. 4,315,703. This application Apr. 23, 1981, Ser. No. 256,938

Int. Cl.³ C08L 75/08

U.S. Cl. 524—500 4 Claims



1. A two-part curable composition suited when mixed for sealing water-bearing or water-holding structures, comprising:

Part A:

a fluid mixture comprising water-miscible organic solvent and water-soluble, non-crystallizing polyurethane prepolymer having terminal isocyanate groups formed by reacting

(i) polyether polyol having at least two terminal hydroxyl groups and a number average molecular weight between about 3,000 and 20,000 and having random ethylene oxide units and higher alkylene oxide units in a mol ratio of ethylene oxide to higher alkylene oxide of 1:1 to 4:1, wherein said higher alkylene oxide is selected from a group consisting of propylene oxide, butylene oxide, pentylene oxide, hexylene oxide and mixtures thereof, and

(ii) sufficient organic polyisocyanate compound having at least two terminal isocyanate groups to provide an NCO:OH ratio of about 5:1 to about 1.05:1;

Part B:

(1) sufficient aqueous polymeric latex selected from the group consisting of polyethylacrylate, polyurethane and acrylonitrile-butadiene-styrene copolymer, containing particulate polymeric material having an average particle size in the range of about 0.01 to about 10 microns to provide a weight ratio of prepolymer to polymeric material latex of about 100:1 to 1:1; and

(2) sufficient water to provide a weight ratio of water to prepolymer on the order of 5:1 to 20:1 and to provide a viscous mass having a viscosity in the range of about 5 to about 1,000 cps when measured with a Brookfield RVT Viscometer at 25° C. using a standard No. 3 spindle rotated at 20 rpm.

4,476,277

RESIN COMPOSITION CONTAINING GRANULAR OR POWDERY PHENOL-ALDEHYDE RESIN

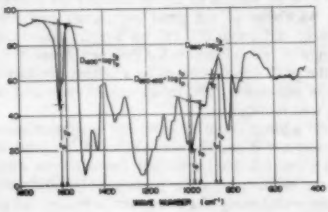
Hiroaki Koyama, and Shigeo Shimizu, both of Kobe, Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,737

Claims priority, application Japan, Dec. 26, 1981, 56-209558; Dec. 28, 1981, 56-209850; Feb. 18, 1982, 57-23530; Mar. 4, 1982, 57-33099; Mar. 4, 1982, 57-33100; Mar. 5, 1982, 57-34036

Int. Cl.³ C08L 27/08, 61/14

U.S. Cl. 524—509 19 Claims



1. A resin composition comprising

(I) a granular or powdery resin which is a condensation product of a phenol, an aldehyde and optionally a nitrogen-containing compound having at least two active hydrogens and is characterized (A) in that at least 30% of the granular or powdery resin consists of spherical primary particles and their secondary agglomerated particles each having a particle diameter of 0.1 to 150 microns, (B) by having such a size that at least 50% by weight thereof can pass through a 100 Tyler mesh sieve, (C) by having a free phenol content, determined by liquid chromatography, of not more than 500 ppm, and (D) in that the granular or powdery resin which is a condensation product of a phenol and an aldehyde has a $D_{990\text{-}1015}/D_{1600}$ ratio of from 0.2 to 9.0 and D_{890}/D_{1600} ratio of from 0.09 to 1.0 in its infrared absorption spectrum measured by a KBr tablet method, in which D_{1600} represents the absorption intensity of an absorption peak at 1600 cm^{-1}, $D_{990\text{-}1015}$ represents the highest absorption intensity of absorption peaks in the range of 990 to 1015 cm^{-1}, and D_{890} represents the absorption intensity of an absorption peak at 890 cm^{-1}, and the granular or powdery resin which is a nitrogen-containing condensation product of a phenol, an aldehyde and a nitrogen-containing compound having at least two active hydrogens has a $D_{960\text{-}1020}/D_{1450\text{-}1500}$ ratio of from 0.1 to 2.0 in its infrared absorption spectrum measured by a KBr tablet method in which $D_{1450\text{-}1500}$ represents the highest absorption intensity of absorption peaks in the range of 1450 to 1500 cm^{-1}, and $D_{960\text{-}1020}$ represents the highest absorption intensity of absorption peaks in the range of 960 to 1020 cm^{-1}; and

(II) at least one thermoplastic resin and, optionally, a filler material other than said granular or powdery resin (I).

4,476,278

DUSTPROOF FILM FORMING MATERIAL

Chiyuki Shimizu, Ota, Japan, assignor to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1984, Ser. No. 568,473

Int. Cl.³ C09D 3/66, 3/82

U.S. Cl. 524—588 5 Claims

1. A composition curable to a dustproof coating material comprising:

(A) 100 parts by weight of an alkyd resin,

(B) 5 to 200 parts by weight of methyltrimethoxysilane,
(C) a curing catalyst; and
(D) 50 to 5000 parts by weight of a solvent mixture consisting of
(a) a volatile organosilicon compound which has a boiling point of 70° to 250° C. at atmospheric pressure and has a formula selected from the group consisting of

$(R^1)_4Si$, $(R^2)_3SiO[(R^3)_2SiO]_mSi(R^2)_3$,

$R^4Si[OSi(R^5)_3]_3$ and $[(R^6)_2SiO]_n$

wherein R^1 to R^6 respectively represent the same or different alkyl groups, m represents O or a positive integer and n represents a positive integer of 3 or above and
(b) a hydrocarbon solvent substantially free of methanol wherein the amount of (a) is 5 to 95 wt % of the total amount of (a) and (b).

4,476,279

HIGH SOLIDS THEIC POLYESTER ENAMELS

Charles W. McGregor, and James J. Connell, both of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Dec. 1, 1983, Ser. No. 556,807
Int. Cl.³ B32B *15/00*; C08G *73/16*
U.S. Cl. 524—602 **15 Claims**

1. A magnet wire enamel comprising a high solids, low viscosity organic solvent solution of a tris(hydroxyethylisocyanurate)polyester having a ratio of hydroxyl to carboxyl groups of 1.65 to 2.0:1 and a hydroxyl number of 216 to 316.

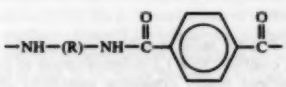
4,476,280

POLYAMIDE COMPOSITIONS FROM MIXTURES OF TRIMETHYLHEXAMETHYLENE DIAMINE, HEXAMETHYLENE DIAMINE AND DIACIDS

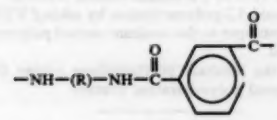
Wassily Poppe, Lombard, and Yu-Tsai Chen, Glen Ellyn, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Feb. 16, 1983, Ser. No. 466,898
Int. Cl.³ C08G *69/26*
U.S. Cl. 524—606 **28 Claims**

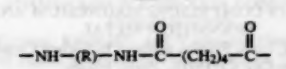
1. A crystalline moldable polyamide copolymer composition comprising the following recurring moieties:



and



and



wherein R is a mixture of a straight chain aliphatic hydrocarbon radical comprising six carbon atoms and a trimethyl substituted saturated hydrocarbon radical, six carbon atoms in length, with two of the three methyl groups on the same carbon atom wherein the mole ratio of the two hydrocarbon radicals is about 55/45 to about 95/5 and wherein the mole ratio of the two hydrocarbon radicals is about 55/45 to about 95/5 and wherein the mole ratio of A/C or A/to a mixture of B and C is about 61/39 to 95/5, and the mole ratio of B to C is about 38/1 to 1/38.

4,476,281

SILICONE RESIN COATING COMPOSITION

Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 964,910, Nov. 30, 1978, abandoned. This application Sep. 8, 1982, Ser. No. 415,845
Int. Cl.³ C08K *3/36*; C08L *83/00, 83/06*
U.S. Cl. 524—767 **13 Claims**

1. An aqueous coating composition comprising a dispersion of colloidal silica, having a particle size of from about 5 to about 150 millimicrons in diameter, in a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and phenyl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent of the partial condensate, said composition having a pH of 7.1 to about 7.8.

4,476,282

METHOD OF PRODUCING FINELY DIVIDED, STABLE OIL-IN-WATER EMULSIONS OF ORGANOPOLYSILOXANES

Götz Koerner; Friedhelm Nickel; Hans Rott, and Günter Schmidt, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 489,853
Claims priority, application Fed. Rep. of Germany, May 4, 1982, 3216585
Int. Cl.³ C08L *83/06*
U.S. Cl. 524—837 **10 Claims**

1. A method of producing finely divided, stable, oil-in-water emulsions of organopolysiloxanes by the condensation or polymerization of organosilicon compounds in finely divided form in the presence of emulsifiers and condensation or polymerization catalysts, comprising
(a) dispersing the amount of emulsifier required for obtaining a stable emulsion in an amount of water equal to 0.5 to 3 times the weight of the emulsifier;
(b) adding the amount of organosilicon compound which is to be emulsified to this dispersion and subjecting the mixture to high shear forces to homogenize it until a uniform, transparent to slightly opaque paste is formed; and
(c) when the desired molecular weight is reached, stirring the paste obtained with water with little shear to form an emulsion,
wherein the catalyst is added in step (a) or step (b) in amounts of 0.5 to 5 weight percent relative to the organosilicon compound and deactivating the catalyst by neutralization when the desired molecular weight is reached.

4,476,283

GRAFT COPOLYMERIZATION PROCESS

Paul G. Andersen, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 441,122
Int. Cl.³ C08G *253/00, 279/00*; C08L *51/00, 51/04*
U.S. Cl. 525—53 **11 Claims**

1. A process for graft copolymerizing material onto a rubber spine comprising continuously feeding the rubber spine into the input zone of an extrusion passageway which is incompletely filled with the rubber spine; advancing the rubber spine into and through a sealing zone of the extrusion passageway; locally retarding the flow of the rubber spine in the sealing zone and compacting the rubber spine in the sealing zone so as to completely fill the extrusion passageway with the rubber spine whereby a solid plug of the rubber spine is formed in the sealing zone; further advancing the rubber spine into and

through a reaction zone of the extrusion passageway; reacting grafting material with the advancing rubber spine in said reaction zone to form a graft copolymerization mixture which is continuously kneaded under graft copolymerization conditions, and thereafter expelling the resulting graft copolymerized mass from the extrusion passageway.

4,476,284

POLYMER COMPOSITIONS AND PROCESS

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 20, 1983, Ser. No. 496,786
Int. Cl.³ C08L *53/00*
U.S. Cl. 525—92 **20 Claims**

1. A process for the production of a polymer composition which comprises producing poly(arylene sulfide) by interreacting under polymerization conditions at least one polyhalogenated aromatic, a sulfur source and an organic polar solvent in the presence of a thermoplastic elastomeric hydrogenated conjugated diene/monovinyl arene block copolymer in an amount sufficient to improve at least one of tensile strength, impact resistance, and flexural modulus.

4,476,285

RUBBER MODIFIED EPOXY ADHESIVE

David J. Crabtree, Solvang, and Elizabeth Y. Park, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 2, 1983, Ser. No. 471,417
Int. Cl.³ C08L *63/00, 63/08*
U.S. Cl. 525—113 **8 Claims**

1. An adhesive composition, comprising:

a reaction product consisting essentially of a bisphenol A epoxy resin and a carboxyl terminated butadiene-acrylonitrile rubber mixed in the ratio of about 4:1 parts by weight of said epoxy resin to said rubber, said reaction product being characterized by linear epoxy-rubber chains produced by a carboxyl-epoxide reaction; and

a curing agent consisting essentially of a cycloaliphatic diamine composed of bis (p-amine-cyclohexyl) methane isomers, the ratio of said reaction product to said curing agent being in the range of 3.5–5.0:1.

4,476,286

THERMOSETTING CATIONIC LATEX COMPOSITIONS CONTAINING AMINOPLAST CURING AGENTS

Suryya K. Das, Pittsburgh, and Charles M. Kania, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 305,565, Sep. 25, 1981, abandoned. This application Sep. 2, 1983, Ser. No. 529,074
Int. Cl.³ C08L *61/28, 33/12*
U.S. Cl. 525—162 **4 Claims**

1. In an improved stable thermosetting coating composition for preparing a decorative or protective coating which is solvent-resistant and weather-durable; said coating composition contains a cationic acrylic latex and a curing agent; the cationic acrylic latex comprises a copolymer of:

(a) an active hydrogen-containing ethylenically unsaturated monomer, and

(b) one or more other ethylenically unsaturated monomers;

the improvement comprising from about 0.5 to 10 percent amino group-containing monomer which is the same or different from (b), the improvement further comprising the cationic acrylic latex which is free of carboxyl or carboxylate groups and the curing agent which is an acidulated melamine.

4,476,287

PROCESS FOR PRODUCING POLYBUTADIENE RUBBER WITH ENHANCED MECHANICAL STRENGTH

Nobunori Maehara; Norihumi Utada, both of Ichihara; Taiji Oda, Chiba; Hidetomo Ashitaka, Ichihara, and Hideo Ishikawa, Chiba, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Dec. 9, 1982, Ser. No. 448,232
Claims priority, application Japan, Dec. 24, 1981, 56-208108
Int. Cl.³ C08F *4/26*
U.S. Cl. 526—92 **34 Claims**

1. A process for producing a polybutadiene rubber with enhanced mechanical strength, comprising the successive steps of:

(A) mixing 1,3-butadiene with an inert organic solvent to provide a 1,3-butadiene solution;

(B) controlling a concentration of water contained in said 1,3-butadiene solution to from 0.2 to 5 millimoles per liter of said 1,3-butadiene solution;

(C) subjecting a first polymerization mixture which comprises said controlled 1,3-butadiene solution and a cis-1,4-polymerization catalyst comprising:

(a) an aluminum catalytic ingredient consisting of at least one organic aluminum compound of the formula (I):

$$AlR_nX_{3-n} \quad (I)$$

wherein R represents a member selected from the group consisting of alkyl radicals having 1 to 6 carbon atoms, a phenyl radical and cycloalkyl radicals, X represents a halogen atom and n represents the number of 1.5 to 2.0, and

(b) a cobalt catalytic ingredient consisting of at least one cobalt compound soluble in said inert organic solvent,

to a cis-1,4-polymerization to convert at least a portion of said 1,3-butadiene contained in said first polymerization mixture to cis-1,4-polybutadiene;

(D) subjecting a second polymerization mixture which comprises the resultant cis-1,4-polybutadiene, non-reacted 1,3-butadiene, the organic solvent, and an 1,2-polymerization catalyst comprising:

(c) a cobalt catalytic ingredient consisting of at least one cobalt compound soluble in the inert organic solvent,

(d) an aluminum catalytic ingredient consisting of at least one organic aluminum compound of the formula (II):

$$AlR_3 \quad (II)$$

wherein R is the same as defined above, and

(e) carbon disulfide, to a 1,2-polymerization to provide a polybutadiene rubber consisting essentially of 5% to 30% by weight of a boiling n-hexane-insoluble fraction and 95 to 70% of a n-hexane-soluble fraction:

(E) stopping said 1,2-polymerization by adding a polymerization shortstopper to the resultant second polymerization mixture; and

(F) isolating the resultant polybutadiene rubber from the stopped second polymerization mixture.

4,476,288

CATALYSTS COMPRISING MAGNESIUM AND A TRANSITION METAL

Karel Bujadoux, Lens, France, assignor to Societe Chimique des Charbonnages-CdF CHIMIE, Paris, France

Continuation of Ser. No. 212,153, Dec. 2, 1980, abandoned, which is a division of Ser. No. 36,167, May 4, 1979, Pat. No. 4,263,170. This application Nov. 22, 1982, Ser. No. 443,525
Claims priority, application France, May 5, 1978, 78 13416
Int. Cl.³ C08F *4/02, 10/02*
U.S. Cl. 526—124 **9 Claims**

1. A process for polymerizing or copolymerizing α-olefins having from 2 to 8 carbon atoms at a temperature of 20° to 350° C. and under a pressure of 1 to 2,500 bars, wherein said poly-

merization is effected in the presence of a catalytic system comprising: (1) a catalyst comprising the product obtained by bringing into contact

(a) a compound of magnesium comprising at least one species selected from the group consisting of magnesium mono-halides (MgX) $(MgX_2)_a(Mg)_b(MgO)_c$ and halo-magnesium hydrides (HMgX) $(MgX_2)_a(MgH_2)_b[Mg(OR)_2]_c$, wherein X is a halogen, $0.1 \leq a \leq 0.5$, $0 \leq b \leq 0.45$ and $0 \leq c \leq 0.25$, R is a hydrocarbon radical, and said species MgX or HMgX is obtained by thermal decomposition of a powdery organo-magnesium halide, R_1MgX, prepared in the absence of any solvent, wherein R_1 is an organic radical; and

(b) at least one halide of a transition metal selected from the group consisting of titanium and vanadium, the valency of said metal in said halide being lower than or equal to 3, the quantities of (a) and (b) being such that the atomic ratio of magnesium to said transition metal is between 1 and 25; and (2) an activator selected from the group consisting of hydrides and organometallic compounds of groups I to III of the Periodic Table, wherein the atomic ratio of the metal of said activator to the transition metal of the catalyst is between 0.1 and 100.

4,476,289

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Adolfo Mayr; Ermanno Susa; both of Ferrara, and Ettore Giachetti, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 622,550, Oct. 14, 1975, Pat. No. 4,298,718, which is a continuation of Ser. No. 324,596, Jan. 18, 1973, abandoned, which is a continuation of Ser. No. 878,954, Nov. 21, 1969, abandoned. This application Jun. 2, 1981, Ser. No. 269,604

Claims priority, application Italy, Nov. 25, 1968, 24141 A/68

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.³ C08F 4/02, 10/00

U.S. Cl. 526—125 **19 Claims**

1. A supported catalyst-forming component for use in preparing catalysts for the polymerization of olefins and comprising the product obtained by contacting a titanium tetrahalide with an anhydrous magnesium dihalide in an active form characterized in that, in its X-ray powder spectrum, the diffraction line which is most intense in the spectrum of the normal, non-active magnesium dihalide is less intense and, in its place, a halo appears.

4,476,290

PHOTOCURABLE SILICON COMPOUND COMPOSITION

Shuzi Hayase, Kawasaki, and Yasunobu Onishi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

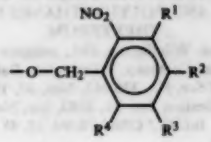
Filed Sep. 16, 1983, Ser. No. 532,903

Claims priority, application Japan, Sep. 20, 1982, 57-162248

Int. Cl.³ C08G 77/06

U.S. Cl. 528—13 **7 Claims**

1. A photocurable silicon compound composition which comprises a silicon compound having a silicon atom to which directly bonded is an o-nitrobenzyloxy group represented by the following formula:



wherein R^1, R^2, R^3 and R^4 may be same or different and each represent a hydrogen atom, a halogen atom, a nitro group, a cyano group, a substituted or unsubstituted alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a substituted or unsubstituted aryl group, an aryloxy group, an acyloxy group having 1 to 5 carbon atoms, a hydroxy group, a mercapto group, an acetyl group or an allyl group,

and optionally a silanol-condensing catalyst.

5. The photocurable silicon compound composition according to claim 1, wherein said silanol-condensing catalyst is selected from the group consisting of dibutyltin dilaurate, diacetylacetonate dichlorotin, lead octenoate, lead naphthenete, stannous naphthenate, stannic naphtenate, zinc octenoate, triphenylphosphine, BF_3-mono- ethylamine, BF_3-piperidine complex and trisacetylacetonatoiron.

4,476,291

RESINS CONTAINING β-PHENYLETHYL TRIFUNCTIONAL SILOXY UNITS AND METHOD FOR MAKING

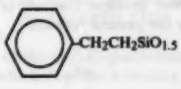
George F. Roedel, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,116

Int. Cl.³ C08G 77/06

U.S. Cl. 528—14 **18 Claims**

1. A silicone resin composition substantially free of α-phenylethylsiloxy units comprising 100 parts by weight alkylsiloxane units selected from the group consisting of $RSiO_{1.5}$ units and R^1R^2SiO units and mixtures thereof, wherein R, R^1 and R^2 are independently selected alkyl radicals having from 1 to about 8 carbon atoms, and from about 75 parts by weight to about 2100 parts by weight β-phenylethylsiloxane units of the formula



so as to provide a silicone resin which exhibits increased reactivity with organic compositions while also providing ultraviolet light and weathering resistance.

4,476,292

CASTABLE POLYURETHANE SYSTEMS

Nancy M. Ham, Williamston, and Teruko Miyazaki, Okemos, both of Mich., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 30, 1984, Ser. No. 574,823

Int. Cl.³ C08G 18/10

U.S. Cl. 528—60 **14 Claims**

1. A substantially clear, castable polyurethane system comprising the reaction product of (a) a polyisocyanate prepolymer comprising the reaction product of an excess of an aliphatic or cycloaliphatic polyisocyanate compound and an amine-based polyol, and (b) an amine-based polyol, a polyether polyol or mixtures thereof.

4,476,293

POLYMERIC CARBONATE DIOLS OF COPOLYETHER GLYCOLS AND POLYURETHANES PREPARED THEREFROM

Ivan M. Robinson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 326,043, Nov. 30, 1981, abandoned. This application Jan. 24, 1983, Ser. No. 460,569

Int. Cl.³ C08G *18/44, 18/48*

U.S. Cl. 528—76 4 Claims

1. A polymeric carbonate diol made by coupling segments of a tetrahydrofuran/alkylene oxide copolymer with a dialkyl carbonate whose alkyl group contains 1–4 carbon atoms or phosgene, the diol having a number average molecular weight of 1200–12,000, as determined by hydroxyl number.

4,476,294

COPOLYESTER-CARBONATE RESINS

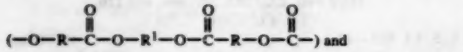
Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 16, 1983, Ser. No. 562,274

Int. Cl.³ C08G *63/64*

U.S. Cl. 528—125 36 Claims

1. Thermoplastic aromatic copolyester-carbonate resin exhibiting improved processability containing recurring structural units represented by the general formulae:



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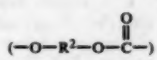
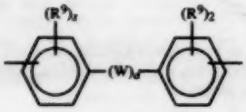


wherein:

R is independently selected from divalent aromatic radicals;

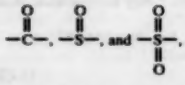
R^1 is selected from divalent aliphatic hydrocarbon radicals, divalent aliphatic ether residues, and divalent aromatic radicals; and

R^2 is selected from divalent residues of dihydric phenols represented by the general formula



wherein

W is selected from divalent hydrocarbon radicals, —O—, —S—, —S—S—,



R^9 is independently selected from monovalent hydrocarbon radicals and halogen radicals,

z is independently selected from positive integers having a value of from 0 to 4 inclusive, and

d is either zero or one.

4,476,295

POLY-IMIDE-OXADIAZOLE SOLUBLE IN M-CRESOL

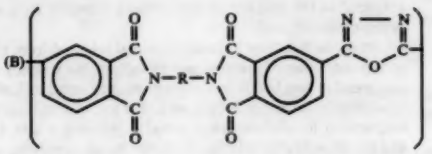
James R. Stephens, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 424,607, Sep. 27, 1982,. This application May 23, 1983, Ser. No. 497,402

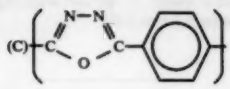
Int. Cl.³ C08G *73/08, 73/10*

U.S. Cl. 528—322 40 Claims

1. A film forming polyoxadiazole soluble in m-cresol comprising the following repeating structural units:



and



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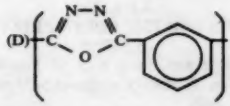


wherein R is an aliphatic or aromatic radical and the ratio of B units to C units and D units is about 100:100 and the ratio of C units to D units is about 1:99 to about 99:1.

4,476,296

PREPARATION OF AROMATIC POLYMERS FROM CYCLOHEXA-3,5-DIENE POLYMERS

Denis G. H. Ballard, Littleton; Andrew Courtis, Hightown, and Ian M. Shirley, Barnton, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 6, 1982, Ser. No. 433,097

Claims priority, application United Kingdom, Oct. 6, 1981, 8130114; Oct. 6, 1981, 8130115; Oct. 6, 1981, 8130116

Int. Cl.³ C08F *8/00*

U.S. Cl. 528—481 7 Claims

1. A process for the preparation of a polymer which has aromatic rings in the backbone thereof which process comprises subjecting a polymer which has 1,2-disubstituted-cyclohexenylene rings in the polymer backbone to a suitable heat treatment in a substantially oxygen-free atmosphere such that the 1,2-substituents are eliminated from at least substantially all the cyclohexenylene rings.

4,476,297

PROCESS FOR REMOVING CATALYST RESIDUES FROM POLYOLEFINS

Hans-Jürgen Kablitz, Liederbach, and Helmut Strametz, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 11, 1982, Ser. No. 407,123

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 3133101

Int. Cl.³ C08F *6/08*

U.S. Cl. 528—486 2 Claims

1. A process for removing catalyst residues from polyolefins

prepared by means of catalysts containing light metal halides and titanium and aluminum compounds by treating the polyolefin suspended in a liquid medium with an aliphatic monocarboxylic acid and separating off and washing out the polyolefin, which comprises carrying out the treatment with 0.1 to 1.5% by weight, relative to dry polyolefin, of a branched aliphatic monocarboxylic acid having 8 carbon atoms or its mixed isomers at a temperature of 40° to 90° C. for 10 to 120 minutes.

4,476,298

ERYTHROMYCIN A DERIVATIVES

Shigeo Morimoto; Yoko Takahashi, both of Saitama; Yoshiaki Watanabe, Tokyo, and Sadafumi Omura, Saitama, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

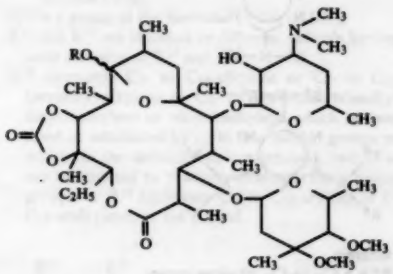
Filed Nov. 24, 1982, Ser. No. 444,171

Claims priority, application Japan, Dec. 3, 1981, 56/195039

Int. Cl.³ C07H *17/08*

U.S. Cl. 536—7.2 **3 Claims**

1. An erythromycin A derivative of the formula



wherein R is hydrogen or methyl, and the pharmaceutically acceptable acid addition salts thereof.

4,476,299

CYCLIC POLYAMINO CONTAINING COMPOUNDS HAVING THERAPEUTIC EFFECT AND THE PREPARATION THEREOF

Hideji Itokawa, Tokyo, Japan, assignor to Tobishi Pharmaceutical Co., Ltd., Tokyo, Japan

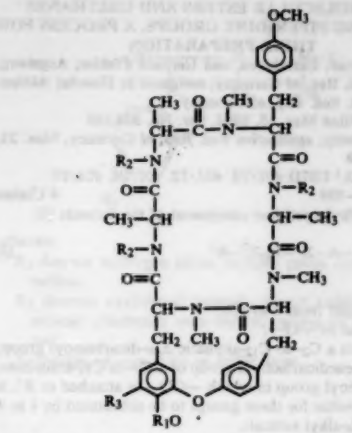
Filed Jul. 26, 1982, Ser. No. 401,865

Claims priority, application Japan, Jul. 28, 1981, 56-117968

Int. Cl.³ C07H *15/26*; C07C *103/52*

U.S. Cl. 536—174 **4 Claims**

1. A compound of formula:



wherein R_1 is

(a) an acyl group of formula —COA, A being a linear or branched saturated or unsaturated C_1–C_{20} alkyl, phenyl or a phenyl substituted by a halogen atom, lower alkyl, nitro or amino group; benzyl or styryl group unsubstituted or substituted by a halogen atom, lower alkyl, nitro or amino group;

(b) a linear or branched C_1–C_{20} alkyl;

(c) C_3–C_6 cycloalkyl;

(d) C_1–C_5 carboxyalkyl or an ester thereof with a C_1–C_5 alcohol;

(e) tetrahydropyran;

(f) glucose;

(g) —SO_2CH_3 or hydrogen; R_2 is hydrogen or lower alkyl and R_3 is hydrogen, amino or nitro.

4,476,300

N-OXIDE OF THE O-β-D GLUCURONIDES OF ANTICHOLINERGIC COMPOUNDS, AND PROCESS FOR PREPARING THE SAME

Walter C. Herlihy, Cambridge, and David M. Epstein, Belmont, both of Mass., assignors to Repligen Corporation, Cambridge, Mass.

Filed Aug. 4, 1983, Ser. No. 520,497

Int. Cl.³ C07H *15/18*

U.S. Cl. 536—17.4 **11 Claims**

1. The N-oxide of the O-β-D-glucuronide of an anticholinergic compound which contains a tertiary nitrogen, and base addition salts thereof.

4,476,301

OLIGONUCLEOTIDES, A PROCESS FOR PREPARING THE SAME AND THEIR APPLICATION AS MEDIATORS OF THE ACTION OF INTERFERON

Jean-Louis Imbach, and Gilles J. M. Gosselin, both of Montpellier, France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Jun. 22, 1982, Ser. No. 390,878

Claims priority, application United Kingdom, Apr. 29, 1982, 8212458

Int. Cl.³ C07H *15/12, 17/00*

U.S. Cl. 536—27 **7 Claims**

1. Oligonucleotide comprising a chain containing in turn n identical or different nucleosidic units, n being higher than 1, preferably not higher than 10, among which at least one of the nucleosidic units is constituted by xyloadenosine, these nucleosidic units being linked by a 2′→5′ bond, comprising a linking group containing at least one phosphorus atom.

4,476,302

HIGH-MOLECULAR ESTERS AND URETHANES CONTAINING PIPERIDINE GROUPS, A PROCESS FOR THEIR PREPARATION

Hartmut Wiezer, Gersthofen, and Gerhard Pfahler, Augsburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

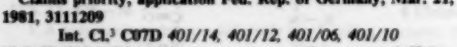
Filed Mar. 15, 1982, Ser. No. 358,315

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111209

Int. Cl.³ C07D *401/14, 401/12, 401/06, 401/10*

U.S. Cl. 544—198 4 Claims

1. A polyalkylpiperidine compound of the formula (I)



(I)

in which

n is an integer from 1 to 100;

X^2 is a bond or —O—;

A represents a C_2- to C_{12}-aliphatic α,ω-dicarbamoyl group, a phenylenedicarbamoyl group or a C_7- to C_{18}-araliphatic dicarbamoyl group in which —CO— is attached to X^1, it being possible for these groups to be substituted by 1 to 4 C_1- to C_4-alkyl radicals,

or A is a C_1- to C_{18}-aliphatic diacyl, triacyl or tetraacyl radical which can be substituted by up to two OH groups,

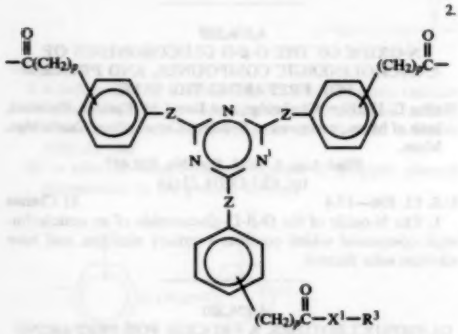
or A is a C_3- or C_{12}-cycloaliphatic diacyl, triacyl or tetraacyl radical which can be substituted by up to two C_1- to C_4-alkyl radicals or up to two OH groups,

or A is a phenyl or naphthyl radical which is substituted by a diacyl, triacyl or tetracyl group and which can be substituted by 1 or 2 C_1- to C_4-alkyl groups and/or by an OH group,

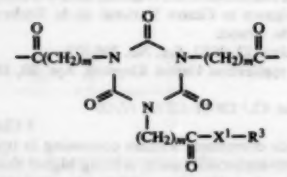
or A is a C_7- to C_{14}-phenylalkyl radical which is substituted by 2 acyl groups, and, in all the abovementioned cases in which a radical contains more than 2 acyl groups, those exceeding 2 are substituted by the radical $—X^1—R^3$,

or A is a radical of the formula

2.



or a radical of the formula



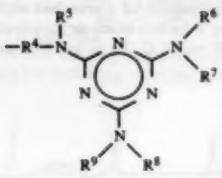
wherein p is an integer from 0 to 2, m is an integer from 1 to 5 and Z is —O— or —NH—;

X^1 represents —O—;

R^3 is methyl, ethyl or a group of the formula (II);

R^1 has the meaning indicated for R^3 or that of a radical A having carbamoyl groups and saturated by —NCO; and

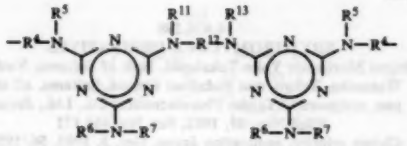
R^2 is hydrogen or a group of the formula (II)



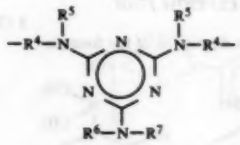
(II)

B represents a bond or a group of the formulae (III), (IV), or (V)

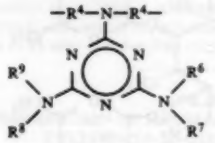
(III)



(IV)



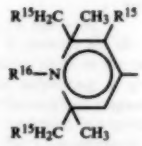
(V)



wherein

R^4 is a C_2- to C_6- alkylene group;

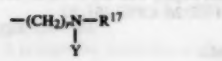
R^5 represents hydrogen, C_1- to C_{12}-alkyl, C_5- to C_{12}-cycloalkyl or a group of the formula (VII)



(VII)

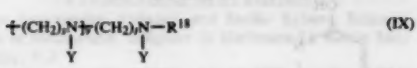
wherein R^{15} is hydrogen or methyl and R^{16} is hydrogen, C_1- to C_{12}-alkyl which can be substituted by 1 or 2 hydroxyl groups, C_3- to C_8-alkenyl or benzyl;

R^6, R^7, R^8 and R^9 are identical or different and represent hydrogen, C_1- to C_{18}-alkyl which can be substituted by hydroxyl, C_1- to C_{18}-alkoxy or C_1- to C_4-dialkylamino, C_5- to C_{12}-cycloalkyl, allyl, phenyl which can be substituted by 1 or 2 C_1- to C_8-alkyl groups and/or by OH, C_7- to C_{14}-aralkyl, a group of the formula (VII) or a group of the formulae (VIII) or (IX)



(VIII)

-continued



(IX)

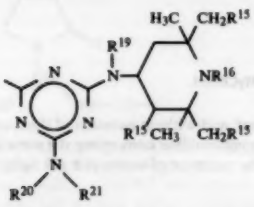
in which

r, s and t are identical or different numbers from 2 to 6;

v is an integer from 0 to 3;

R^{17} and R^{18} are identical or different radicals which can be hydrogen, C_1- to C_{18}-alkyl, C_5- to C_{12}-cycloalkyl, C_7- to C_{14}-aralkyl or a group of the formula (VII); and

Y is a radical of the formula (X)



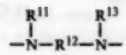
(X)

wherein R^{19} and R^{20} have the meanings given for R^6, R^7, R^8 and R^9, excepting those of the formulae (VIII) and (IX); and R^{21} is hydrogen, C_1- to C_{18}-alkyl, C_5- to C_{12}-cycloalkyl, C_7- to C_{14}-aralkyl or a group of the formula (VII);

R^{10} is a group of the formulae (VIII) or (IX);

R^{11} and R^{13} are identical or different radicals having the same meaning as R^{17} and R^{18};

R^{12} represents C_2- to C_{18}-alkylene or C_2- to C_{12}-bis-(propoxy)-alkylene or C_6- to C_{18}-monocycloalkylene, dicycloalkylene or tricycloalkylene which is unsubstituted or substituted by up to four methyl groups and in which, in the definition first mentioned, two C atoms can be replaced by N atoms which can carry propylene groups, or R^{12} represents C_6- to C_{18}-arylene or C_7- to C_{18}-aralkylene, or the radical



represents a piperazinylene radical, and

R^{14} is methyl, hydroxymethylene or ethyl, with the proviso that in formula (I) at least one radical represents a group of the formula (VII) or contains this group.

4,476,303

THIAZOLINO-[3,2-a]-1,3,5-TRIAZINE-2-ONE-4-(ONE OR THIONE) DERIVATIVES

Kuniyasu Maeda; Minoru Kaeriyama; Nobuo Matsui; Masami Mizuno; Yasushi Yasuda, all of Kanagawa, and Akira Nakata, Shizuoka, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

PCT No. PCT/JP81/00139, § 371 Date Feb. 8, 1983, § 102(e) Date Feb. 8, 1983, PCT Pub. No. WO82/04436, PCT Pub. Date Dec. 23, 1982

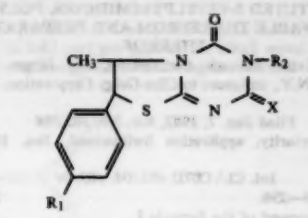
PCT Filed Jun. 15, 1981, Ser. No. 467,477

Claims priority, application Japan, Jun. 12, 1981, 56-90434

Int. Cl.³ C07D 513/04

U.S. Cl. 544—223 **2 Claims**

1. A compound having the formula



wherein

R_1 denotes hydrogen atom, halogen group atom or methyl radical,

R_2 denotes cyclohexyl radical, phenyl radical or phenyl radical substituted with methyl radical or nitro radical, and

X denotes oxygen atom or sulfur atom.

4,476,304

PROCESS FOR THE PURIFICATION OF RIBOFLAVINE-5'-MONOPHOSPHATE

Kenji Yokota, Tokyo; Hiroshi Kusano, Kanagawa, and Ryuichi Sugimoto, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited and Wakamoto Pharmaceutical Co., Ltd., both of, Japan

Filed Aug. 20, 1982, Ser. No. 409,809

Claims priority, application Japan, Aug. 21, 1981, 56-131355

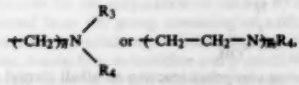
Int. Cl.³ C07F 9/65

U.S. Cl. 544—244 **10 Claims**

1. A process for the purification of riboflavine-5'-monophosphate comprising subjecting crude riboflavine-5'-monophosphate containing riboflavine-4'-monophosphate to chromatography using a column packed with a weakly basic anion-exchange resin having a skeleton of a crosslinked polyacrylic acid ester or polymethacrylic acid ester in which at least a part of the ester linkages thereof are converted into amide linkages represented by the following formula (I):

(I)

wherein R_1 represents a group denoted by



in which n is an integer of from 2 to 6, m is an integer of from 2 to 4, and R_3 and R_4 are each a hydrogen atom or an alkyl group having 1 to 6 carbon atoms; and R_2 is the same as defined in R_1 or represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, to obtain a fraction of riboflavine-5'-monophosphate containing a reduced amount of riboflavine-4'-monophosphate from an eluate of the column.

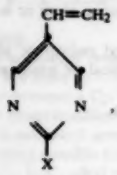
4,476,305

2-SUBSTITUTED 5-VINYLPYRIMIDINES, POLYMERS OBTAINABLE THEREFROM AND PREPARATION THEREOF

Vratislav Kvita, Reinach, Switzerland, and Jürgen Kaschig, Ardsley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

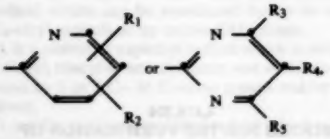
Filed Jun. 7, 1982, Ser. No. 385,586
Claims priority, application Switzerland, Jun. 10, 1981, 3793/81
Int. Cl.³ C07D 401/04, 403/04
U.S. Cl. 544—296 5 Claims

1. A compound of the formula I



(I)

wherein X is



and each of R_1 to R_5 independently of the other is hydrogen, methyl or ethyl.

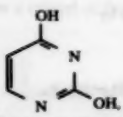
4,476,306

METHOD OF PREPARING 2,4-DIHYDROXYPYRIMIDINE

Hermann Peeters, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

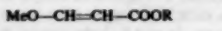
Filed Jul. 23, 1982, Ser. No. 401,294
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3130455
Int. Cl.³ C07D 239/55
U.S. Cl. 544—309 17 Claims

1. Method of preparing 2,4-dihydroxypyrimidine of the formula



(1)

which process comprises reacting an alkali formyl acetic acid ester of the formula

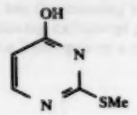


(2),

wherein

Me is an alkali metal and

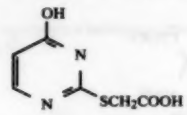
R is an alkyl moiety with thiourea to form the alkali salt of 2-mercapto-4-hydroxypyrimidine of the formula



(3)

wherein

Me is defined as above and, without isolation of said 2-mercapto-4-hydroxypyrimidine, reacting the same with chloroacetic acid to form 2-carboxymethylthio-4-hydroxypyrimidine of the formula



(4)

or the alkali salt thereof, and without isolation of the 2-carboxymethylthio-4-hydroxypyrimidine converting the same immediately to uracil, in the presence of water at a pH value of up to 7.

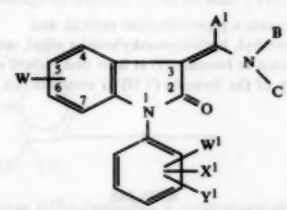
4,476,307

HETEROYLIDENE INDOLONE COMPOUNDS

Harry R. Howard, Jr., Bristol, and Reinhard Sarges, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,544
Int. Cl.³ C07D 401/04, 403/04
U.S. Cl. 546—201 11 Claims

1. A compound of the formula



wherein

A^1 and B together are 1,3-propylene, 1,4-butylene or 1,5-pentylene;

C is hydrogen, $(C_1–C_2)$alkyl, phenyl or benzyl;

W is hydrogen, $(C_1–C_2)$alkyl, $(C_1–C_2)$alkoxy, chloro, or fluoro; and

W^1, X^1 and Y^1 are each independently hydrogen, $(C_1–C_2)$alkyl, $(C_1–C_2)$alkoxy, $(C_1–C_2)$alkylthio, bromo, chloro, fluoro, trifluoromethyl, hydroxy, formyl, carboxamido, $(C_1–C_2)$alkylcarboxamido, di$(C_1–C_2)$alkylcarboxamido, cyano, nitro, amino, $(C_1–C_2)$alkylamino or di$(C_1–C_2)$alkylamino.

4,476,308

1-PYRROLIDINE ACETAMIDES

Werner Aschwanden, Ettingen, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

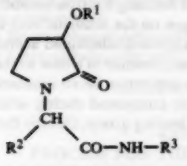
Continuation of Ser. No. 397,751, Jul. 13, 1982, abandoned. This application Jun. 20, 1983, Ser. No. 506,147

Claims priority, application Switzerland, Jul. 24, 1981, 4849/81; May 5, 1982, 2768/82

Int. Cl.³ C07D *401/12*

U.S. Cl. 546—208 9 Claims

1. A pyrrolidine of the formula



wherein R^1 is hydrogen or lower alkanoyl, R^2 is hydrogen or lower alkyl and R^3 is hydrogen, lower alkyl or a group of the formula $-(CH_2)_n-NR^4R^5$, wherein n is a whole number of 2 to 4 and R^4 and R^5 each, independently, are hydrogen or lower alkyl, or R^4 and R^5 taken together with the nitrogen atom are a pyrrolidinyl, piperidinyl, piperazinyl or morpholinyl group which is optionally substituted by one or two lower alkyl groups,

an enantiomer thereof, or a pharmaceutically acceptable acid addition salt of a compound of formula I or an enantiomer thereof, which is basic.

5. The compound in accordance with claim 1, (R)-cis-N-[2-(2,6-dimethyl-1-piperidinyl)ethyl]-2-(3-hydroxy-2-oxo-1-pyrrolidinyl)acetamide.

4,476,309

METHOD FOR MAKING AROMATIC ETHERIMIDES

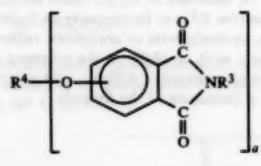
John W. Verbicky, Jr., Scotia, and Elbridge A. O'Neill, Jr., Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1983, Ser. No. 476,948

Int. Cl.³ C07D *209/48*

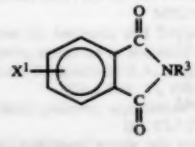
U.S. Cl. 548—480 7 Claims

1. A method for making aromatic etherimide of the formula

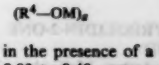


which comprises,

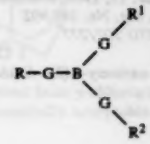
(A) heating a substituted phthalimide of the formula,



and an alkali metal phenoxide salt of the formula,



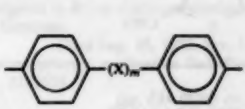
in the presence of a nonpolar organic solvent and from 0.03 to 0.40 part per part of the alkali metal phenoxide salt, of a triorganoborate having the formula



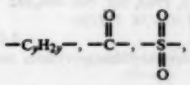
(B) agitating the resulting mixture with a precipitating or extractive organic solvent for the resulting bisimide or allowing the mixture to cool and

(C) recovering the bisimide from the mixture of (B),

where R, R^1 and R^2 are selected from monovalent $C_{(1-13)}$ hydrocarbon groups and substituted $C_{(1-13)}$ monovalent hydrocarbon groups, R^3 is a monovalent group selected from the class consisting of hydrogen, a $C_{(1-8)}$ alkyl radical and a $C_{(6-13)}$ aryl group, R^4 is an aromatic group selected from the group consisting of a $C_{(6-30)}$ aromatic carbocyclic group, a halogenated $C_{(6-30)}$ aromatic carbocyclic group and an alkylated $C_{(6-30)}$ carbocyclic group and a divalent organic group of the formula,



where X is a member selected from the group consisting of divalent groups of the formula,



—O—, and —S—, m is 0 or 1, y is a whole number from 1 to 5, G is a divalent group selected from oxygen and sulfur, M is an alkali metal ion, X^1 is a group selected from nitro and halo, and a is an integer equal to 1 or 2, and when a is 1, R^4 is monovalent and when a is 2, R^4 is divalent.

4,476,310

PROCESS FOR THE PREPARATION OF INDOLES

Tadatoshi Honda, Hiratsuka; Fujio Matsuda; Tadamitsu Kiyoura, both of Kamakura, and Kazuhiro Terada, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,651

Claims priority, application Japan, Jun. 12, 1981, 57-89612

Int. Cl.³ C07D *209/04, 209/12*

U.S. Cl. 548—508 6 Claims

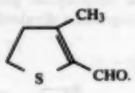
1. In a process for the preparation of indoles by reacting an aniline selected from the group consisting of aniline, o-toluidine, m-toluidine, p-toluidine, o-haloaniline, m-haloaniline, p-haloaniline, o-anisidine, m-anisidine and p-anisdine with a 1,2 glycol selected from the group consisting of ethylene glycol, 1,2-propylene glycol and 1,2-butanediol in the presence of a catalyst, the improvement which comprises carrying out the reaction in the presence of a catalyst comprising silver supported on a carrier having a specific surface area of not less than 10 m^2/g, said catalyst containing 0.1 to 50 parts by weight of silver per 100 parts by weight of the carrier, and said carrier being SiO_2, an oxide mixture of SiO_2 and the other metal oxide or oxides or activated carbon.

4,476,311
ANALGESIC 4-CARBOXY-PYRROLIDIN-2-ONE COMPOUND
Bola V. Shetty, Stamford, Conn.; Arthur McFadden, East Brunswick, N.J., and Peter Hofer, Liestel, Switzerland, assignors to The Purdue Frederick Company, New York, N.Y.
Continuation of Ser. No. 129,578, Mar. 12, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 349,992
Int. Cl.³ A61K 31/40; C07D 207/277
U.S. Cl. 548—531 1 Claim

1. The compound 1-N-benzyl-4-carboxy-5-(2,6-dichlorophenyl)-pyrrolidin-2-one.

4,476,312
PROCESSES FOR MAKING 3-METHYLTHIOPHENE-2-CARBOXALDEHYDE AND INTERMEDIATES THEREFOR
Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.
Division of Ser. No. 381,596, May 24, 1982,. This application Feb. 17, 1984, Ser. No. 581,463
Int. Cl.³ C07D 333/24; A61K 31/38
U.S. Cl. 549—70 1 Claim

1. The compound having the formula



4,476,313
PYRYLIUM SALTS
Kevin T. Potts, Schenectady, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.
Division of Ser. No. 364,893, Apr. 2, 1982, Pat. No. 4,451,659. This application May 13, 1983, Ser. No. 494,392
Int. Cl.³ C07D 309/34, 311/30
U.S. Cl. 549—213 3 Claims

1. 2,6-di-(4-methoxyphenyl-4(methylthio)pyrylium tetrafluoroborate.

2. 2-methyl-4-methylthio-6-(4-methoxyphenyl)pyrylium tetrafluoroborate.

3. 4-methylthio-2-(4-methoxphenyl)-5,6,7,8-tetrahydrobenzo-[b] pyrylium tetrafluoroborate.

4,476,314
PROCESS FOR PRODUCING OLEFIN OXIDES
Yasuhisa Kuriyama, Tokyo; Minoru Kakuda, Chiba, and Shoichi Nitoh, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan
Filed Sep. 7, 1982, Ser. No. 415,196
Claims priority, application Japan, Sep. 4, 1981, 56-139502; Nov. 26, 1981, 56-189709
Int. Cl.³ C07D 301/12, 301/14
U.S. Cl. 549—531 6 Claims

1. A process for producing an olefin oxide comprising reacting an olefin with hydrogen peroxide in a liquid phase in the presence of (a) a solvent comprising an organic carboxylic acid, wherein said organic carboxylic acid is present in an amount of 5% or more by volume based on the total volume of the liquid phase in the reaction system, and (b) a catalyst comprising at least one organotin compound represented by the formulae:

RSnXYZ, and

RSn(=O)X

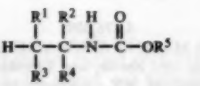
wherein R represents an alkyl group having 1 to 12 carbon atoms, an aralkyl group having 7 to 12 carbon atoms or an aryl group having 6 to 12 carbon atoms; X, Y and Z, which may be the same or different, each represents hydrogen, an aryl group having 6 to 12 carbon atoms, a halogen atom, a hydroxyl group, an alkoxy group having 1 to 12 carbon atoms, or an acyloxy group having 1 to 12 carbon atoms.

4,476,315
NUCLEOPHILIC SUBSTITUTION PROCESS
G. Patrick Stahly, and Barbara C. Stahly, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 373,633, Apr. 30, 1982,. This application Dec. 23, 1982, Ser. No. 452,616
Int. Cl.³ C07C 79/46
U.S. Cl. 560—20 29 Claims

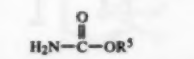
1. A process which comprises reacting a nitroaromatic compound which is devoid of halogen on the aromatic ring carrying a nitro group with an alpha,alpha-disubstituted acetic acid ester in an inert solvent and in the presence of a base so that the ester undergoes a nucleophilic substitution on an unsubstituted ring carbon of the nitroaromatic compound during which an alpha-substituent functions as a leaving group, thereby forming a nitroarylacetic acid ester.

4,476,316
PREPARATION OF N-SUBSTITUTED CARBAMATES
Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jan. 19, 1983, Ser. No. 459,057
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204711
Int. Cl.³ C07C 125/065, 126/067
U.S. Cl. 560—024 20 Claims

1. A process for the preparation of an N-substituted carbamate of the formula


I

where the individual radicals R^1, R^2 and R^3 may be identical or different and R^2 is always an aliphatic, cycloaliphatic, araliphatic or aromatic radical, R^4 is an aliphatic, cycloaliphatic or araliphatic radical or, when R^2 is an aromatic radical or a member of an alicyclic, bicyclic or tricyclic radical, may furthermore be hydrogen, 2 or more of the radicals R^1, R^2, R^3 and R^4 may furthermore be members of an alicyclic, bicyclic or tricyclic radical, R^1 and/or R^3 may furthermore be hydrogen, and R^5 is an aliphatic, cycloaliphatic or araliphatic radical, by reaction of a carbamate with an olefin in the presence of an organic cation exchanger containing sulfonic acid groups, as the catalyst, wherein a carbamate of the formula


II

where R^5 has the above meanings, is reacted with an olefin of the formula

III

where R^1, R^2, R^3 and R^4 have the above meanings, in the presence of from 0.1 to 50 g of an alcohol per mole of starting material II.

4,476,317

PROCESS FOR THE PRODUCTION OF METHYLENEDICARBANILATES

Keisuke Wada, Kanagawa, Japan, assignor to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 192,979, Oct. 1, 1980,. This application Jan. 17, 1983, Ser. No. 458,410

Claims priority, application Japan, Oct. 1, 1979, 54-126579; Oct. 15, 1979, 54-132699; Oct. 15, 1979, 54-132700

Int. Cl.³ C07C *125/07*

U.S. Cl. 560—025 13 Claims

1. A process for producing a methylenedicarbanilate which comprises reacting a carbanilate with formaldehyde compound in the presence of at least one catalyst selected from the group consisting of:

(1) heteropolymolybdic acid; and

(2) heteropolytungstic acid.

4,476,318

PROCESS FOR THE PREPARATION OF 1,3-PROPANEDIOL BIS(P-AMINOBENZOATE)

Takao Harada, Shizuoka, and Chihiro Yazawa, Kanagawa, both of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

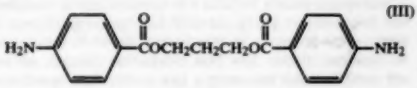
Filed Sep. 29, 1982, Ser. No. 428,518

Claims priority, application Japan, Oct. 6, 1981, 56-159596

Int. Cl.³ C07C *101/00, 69/76, 101/48*

U.S. Cl. 560—50 4 Claims

1. A process for preparing 1,3-propanediol bis(p-aminobenzoate) represented by formula (III):

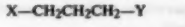


(III)

comprising reacting (i) a p-aminobenzoic acid alkali metal salt represented by formula (I):

(I)

(wherein M is an alkali metal atom) with (ii) dihalogenated propane represented by formula (II):



(II)

(wherein X and Y may be the same or different, and are halogen atoms), in an aprotic polar solvent and at a temperature of from 60° C. to 150° C.

4,476,319

P-CHLOROPHENOXYACETIC ACID DERIVATIVE, ITS METHOD OF PREPARATION, THE PHARMACEUTICAL COMPOSITIONS CONTAINING IT AND ITS USE IN MEDICINE

Romeo R. Andreoli, and Xavier D. Cirera, both of Barcelona, Spain, assignors to Sociedad Espanola de Especialidades Farmaco-Terapeuticas S.A., Barcelona, Spain

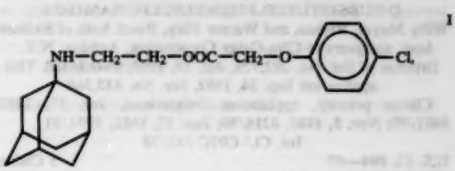
Filed Oct. 27, 1982, Ser. No. 436,960

Claims priority, application Spain, Oct. 29, 1981, 506.669

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—62 7 Claims

1. P-chlorophenoxyacetate of 1-aminoadamantine-2-ethanol, of the following structural formula I:



I

derived from p-chlorophenoxy acetic acid, as well as its pharmaceutically acceptable salts.

4,476,320

PROCESS FOR THE PREPARATION OF FLUOROAROMATIC COMPOUNDS SUBSTITUTED IN THE O-POSITION

Herbert Diehl, Leverkusen; Heinrich Pelster, Odenthal, and Hubert Habetz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

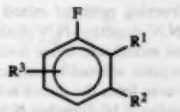
Filed Sep. 29, 1982, Ser. No. 431,856

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 3141659

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—103 16 Claims

1. A process for the preparation of a fluoroaromatic compound substituted in the ortho position of the formula

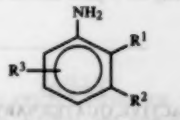


wherein

R^1 represents halogen, or represents a trihalogenomethyl, alkoxy, trifluoromethoxy, carboxyl or an alkoxycarbonyl group and

R^2 and R^3 are identical or different and independently represent hydrogen, halogen, alkyl, trihalogenomethyl, alkoxy, trifluoromethoxy, carboxyl or an alkoxycarbonyl group,

which comprises contacting an aniline substituted in the ortho-position of the formula



wherein

R^1, R^2 and R^3 have the previously assigned significance, with an alkyl nitrite in the presence of an alcohol and/or ether, in the presence of hydrogen fluoride and in the presence of boron trifluoride or a boric acid ester, at a temperature from −20° to +10° C. whereby to form a diazonium tetrafluoborate, isolating said diazonium tetrafluoborate and thereafter decomposing said diazonium tetrafluoborate by contacting the same with an inert heat transfer medium at an elevated temperature.

4,476,321
O-SUBSTITUTED PHENYLSULFONAMIDES

Willy Meyer, Riehen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

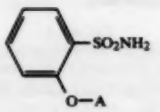
Division of Ser. No. 282,779, Jul. 13, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 423,344

Claims priority, application Switzerland, Jul. 17, 1980, 5481/80; Nov. 5, 1980, 8216/80; Jun. 17, 1981, 3991/81

Int. Cl.³ C07C *143/78*

U.S. Cl. 564—89 5 Claims

1. A compound of the formula:



wherein A is $-CF_2CF_3$, $-CH_2CH_2Cl$, CF_2CF_2Cl, or $-CF_2CF_2Br$.

4,476,322
SYNTHESIS OF DIMETHYLMETHYLENE DINITRAMINE

Marguerite S. Chang, Fort Washington, and Robert R. Orndoff, Waldorf, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1982, Ser. No. 394,218

Int. Cl.³ C07C *111/00*

U.S. Cl. 564—109 17 Claims

1. A process for preparing methylnitramine comprising the following steps in order:

(1) adding N,N'-dimethylurea on an organic solvent to mixed acid which is maintained at a temperature which is above the freezing point of mixed acid up to 5° C. to produce N,N'-dimethyl-N,N'-dinitrourea and then drowning the mixed acid in ice water;

(2) using an organic solvent to extract the N,N'-dimethyl-N,N'-dinitrourea from the mixed acid-water mixture;

(3) hydrolyzing the N,N'-dimethyl-N,N'-dinitrourea to form methylnitramine by adding the N,N'-dimethyl-N,N'-dinitrourea—organic solvent solution to water which is at a temperature of from 37° C. to 100° C.; and

(4) isolating the product methylnitramine by:

(a) evaporating the organic solvent to completion;

(b) reducing the volume of the water phase by removing water to a minimum until just before methylnitramine begins to decompose;

(c) extracting methylnitramine from the water phase with the organic solvent; and

(d) evaporating the organic solvent to obtain methylnitramine.

4,476,323
SURFACE-ACTIVE QUATERNARY AMMONIUM COMPOUNDS FOR TREATMENT OF TEXTILES AND CELLULOSIC MATERIALS

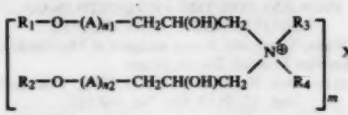
Karl M. E. Hellsten, Varsaddsvagen 4, S 444 05 Odsmal; Jan G. Emanuelsson, Nattviolsvagen 8, S 444 00 Stenungsund; Svante L. Wahlen, Mogatan 3, S 444 00 Stenungsund, and Axel I. Thebrin, Bokgatan 5, S 444 00 Stenungsund, all of Sweden

Filed Feb. 24, 1981, Ser. No. 237,800

Int. Cl.³ C07C *95/02*

U.S. Cl. 564—294 14 Claims

1. Surface-active quaternary ammonium compounds having the general formula:



wherein:

R_1 and R_2 are each hydrocarbon groups having from about twelve to about forty carbon atoms;

R_3 and R_4 are selected from the group consisting of methyl, ethyl and hydroxyethyl;

A is an oxyalkylene group derived from both ethylene oxide and propylene oxide, having a ratio of oxyethylene units to the total number of oxyalkylene groups within the range from about 1:6 to about 5:6;

m is a number corresponding to the valence of X;

n_1 and n_2 represent the average number of oxyalkylene units and are within the range from about 6 to about 30; and

X is an anion.

4,476,324
CATALYZED ALDOL CONDENSATIONS

Walter T. Reichle, Warren, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 2, 1982, Ser. No. 384,212

Int. Cl.³ C07C *45/45*

U.S. Cl. 568—388 22 Claims

1. In the method for aldol condensation of active hydrogen-containing compounds having the group

adjacent to electron withdrawing groups including aldehydic, ketonic carbonyl, nitro, cyano and quaternary salt groups, the improvement comprising contacting said active hydrogen compounds containing 0 to about 20 percent by weight of water with an aldol condensation catalyst prepared by:

(1) Adding mixed aqueous solutions of divalent and trivalent inorganic salts, wherein the divalent cations of said salts are selected from the group consisting of Mg^{++}, Zn^{++}, Ni^{++}, Co^{++}, Cr^{++} and mixtures thereof and the trivalent cations of said salts are selected from the group consisting of Al^{+++}, Fe^{+++} and Cr^{+++}, to a solution of a stoichiometric amount of sodium hydroxide and sodium carbonate at ambient temperatures with vigorous stirring whereby a slurry is obtained;

(2) Heating the slurry from (1) at about 60°–200° C. until crystallization occurs providing a synthetic anionic clay mineral having the generic formula:

$$M_mN_n(OH)_{(2m+2n)}A_{a/b}\cdot bH_2O$$

wherein

M is a divalent metal cation;

N is a trivalent metal cation;

A is a mono-, di- or trivalent anion which decomposes at about 300°–500° C. to form a volatile gas;

m and n are such that m/n has values of 1 to about 6;

a is a number with the provisos that when A is a monovalent anion, a=n, when A is a divalent anion, $a=\frac{1}{2}n$, and when A is trivalent anion $a=\frac{1}{3}n$; and

b is an integer having values of 1 to 10;

(3) Filtering the solids from the slurry in (2);

(4) Working the filtered solids with water;

(5) Heating the filtered solids from (4) to a temperature of about 300° to about 600° C.; and

(6) Recovering the heated solids from (5) as an aldol condensation catalyst.

4,476,325
Patent Not Issued For This Number

4,476,326
PROCESS FOR THE SYNTHESIS OF ETHANOL AND ACETALDEHYDE USING COBALT COMPOUNDS WITH NOVEL PROMOTERS

Jiang-Jen Lin, Williamson, and John F. Knifton, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 3, 1983, Ser. No. 463,380
Int. Cl.³ C07C 45/49
U.S. Cl. 568—487 14 Claims

1. A process for preparing ethanol and acetaldehyde which comprises reacting a mixture of hydrogen, carbon monoxide and methanol in the presence of a catalyst system comprising a cobalt-containing compound from the group consisting of one or more oxides of cobalt, cobalt salts of a mineral acid, cobalt salts of an organic carboxylic acid and cobalt carbonyl or hydrocarbonyl derivatives, and a promoter selected from the group consisting of: (a) an organo-sulphur compound containing one or more sulphur atoms bonded to one or more carbon atoms from the group consisting of phenylsulphide, diphenyl sulphoxide, dimethylsulphoxide, dibutylsulphide, cis-bis(1,2-benzylthio)ethane, and 1,2-dimercapto-4-methylbenzene, (b) a nitrogen-containing compound, containing one or more tertiary nitrogen donor atoms bonded to one or more carbons atoms in combination with an iodide-containing form of said cobalt-containing compounds and (c) 1,1'-bis(diphenylphosphino)ferrocene, heating said reaction mixture to a temperature of from 50° C. to about 350° C. and at a pressure of 500 psi or greater.

4,476,327
PROCESS FOR THE SYNTHESIS OF GLYCOL MONOMETHYLETHERS

Carlo Neri; Franco Buonomo, both of S. Donato Milanese, and Bartolomeo Anfossi, Milan, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Jul. 14, 1983, Ser. No. 513,798
Claims priority, application Italy, Jul. 28, 1982, 22605 A/82
Int. Cl.³ C07C 41/05
U.S. Cl. 568—678 5 Claims

1. A process for the synthesis of glycol monomethyl ethers, characterised by reacting together an olefin compound, methanol and hydrogen peroxide in aqueous solution, in the presence of synthetic zeolites containing titanium atoms, of general formula:

$$x\mathrm{TiO_2}\cdot(1-x)\mathrm{SiO_2}$$

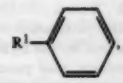
where x lies between 0.0001 and 0.04.

4,476,328
PROCESS FOR PRODUCING 3,3,3-TRIFLUOROPROPYL SUBSTITUTED PHENOL

Yoshiro Kobayashi, Tokyo; Itsumaro Kumadaki, Hachiohji; Masaaki Takahashi, Tokyo, and Takashi Yamauchi, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 233,714, Feb. 12, 1981, abandoned. This application Nov. 12, 1981, Ser. No. 320,538
Claims priority, application Japan, Feb. 22, 1980, 55-21094; Nov. 21, 1980, 55-164435; Dec. 29, 1980, 55-186563; Dec. 29, 1980, 55-186564
The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed.
Int. Cl.³ C07C 37/14
U.S. Cl. 568—775 1 Claim

1. A process for producing a substituted benzene derivative having at least one benzene ring substituted by at least one 3,3,3-trifluoropropyl group which comprises bringing mono-substituted benzene represented by the formula



wherein R^1 is hydroxy group, into reaction with 3,3,3-trifluoropropylene in the presence of an acid catalyst selected from the group consisting of hydrogen fluoride, boron trifluoride and a mixture thereof.

4,476,329
SELECTIVE ALKYLATION OF PHENOL TO O-CRESOL

Gregory R. Chambers, Rexford, and John J. Talley, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,974
Int. Cl.³ C07C 37/16
U.S. Cl. 568—804 11 Claims

1. A process for producing o-cresol which comprises reacting in vapor phase, phenol, methanol and 2,6-xylenol on a magnesium oxide catalyst at a temperature between about 400° C.–550° C. to simultaneously methylate phenol with methanol and transmethylate 2,6-xylenol with phenol.

4,476,330
CONVERSION OF ETHERS USING A ZEOLITE CATALYST

George T. Kerr, Lawrenceville; Charles J. Plank, Woodbury, and Edward J. Rosinski, Pedericktown, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 934,236, Aug. 16, 1978, Pat. No. 4,306,106, which is a continuation of Ser. No. 912,649, Jun. 5, 1978, Pat. No. 4,243,828, which is a continuation of Ser. No. 752,227, Dec. 20, 1976, abandoned, which is a division of Ser. No. 546,863, Feb. 3, 1975, Pat. No. 4,011,278, which is a continuation of Ser. No. 296,370, Oct. 5, 1972, abandoned, which is a continuation of Ser. No. 821,980, May 5, 1969, abandoned, which is a continuation-in-part of Ser. No. 494,846, Oct. 11, 1965, Pat. No. 3,442,795, which is a continuation-in-part of Ser. No. 261,494, Feb. 27, 1963, abandoned. This application Aug. 18, 1981, Ser. No. 293,892

The portion of the term of this patent subsequent to Mar. 8, 1994, has been disclaimed.

Int. Cl.³ C07C *37/00*

U.S. Cl. 568—806 11 Claims

1. A process for effecting dehydration reaction of an aliphatic ether containing up to 6 carbon atoms to product comprising a higher molecular weight compound, which process comprises contacting the ether at a temperature of from 70° to 1400° F. with a catalyst comprising zeolite having a silica to alumina ratio substantially greater than 10 to 1.

4,476,331
TWO STAGE HYDROGENOLYSIS OF CARBOHYDRATE TO GLYCOLS USING SULFIDE MODIFIED RUTHENIUM CATALYST IN SECOND STAGE

Michael Dubeck, Birmingham, and Gordon G. Knapp, Southfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 348,026, Feb. 11, 1982, Pat. No. 4,430,293. This application Sep. 6, 1983, Ser. No. 529,727

Int. Cl.³ C07C *29/136, 29/14, 31/20*

U.S. Cl. 568—861 12 Claims

1. In a process for the production of a lower polyhydric alcohol or a mixture thereof by the hydrogenation and hydrogenolysis of a carbohydrate, said process comprising a first stage of contacting an aldose- or ketose-containing carbohydrate with hydrogen in the presence of a first catalyst and under non-basic reaction conditions to obtain a higher polyhydric alcohol or a mixture thereof and a second stage of further contacting said higher polyhydric alcohol or mixture thereof with hydrogen in the presence of a base and a second catalyst, the improvement wherein said second catalyst is sulfide-modified ruthenium, whereby said higher polyhydric alcohol is selectively converted in high yield to a mixture comprising a substantial amount of ethylene glycol and propylene glycol.

4,476,332
PREPARATION OF ALKANEDIOLS

Christopher J. Nalepa, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 21, 1983, Ser. No. 564,089

Int. Cl.³ C07C *29/132, 33/26, 67/00, 59/245*

U.S. Cl. 568—865 20 Claims

1. In a process for producing alkanediols by the hydrolytic reduction of hydrolytically reducible furans at elevated temperatures and elevated pressures using a supported metal catalyst, said alkanediols having the two hydroxy groups resulting from said hydrolytic reduction bonded to different carbon atoms which are separated from each other by two other carbon atoms, the improvement which comprises conducting the hydrolytic reduction in an aqueous medium utilizing a supported ruthenium catalyst, and a trihaloacetic acid or a mixture thereof as a promoter for the hydrolytic reduction.

4,476,333
PROCESS FOR THE CONTINUOUS PRODUCTION OF SECONDARY BUTYL ALCOHOL

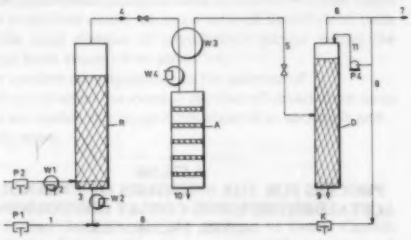
Wilhelm Neier; Werner Webers, both of Rheinberg; Rainer Ruckhaber, Moers; Günther Osterburg, Duisburg, and Wolf J. Ostwald, Rheinberg, all of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 312,205, Oct. 19, 1981, abandoned. This application Jan. 27, 1983, Ser. No. 461,363

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3040997

Int. Cl.³ C07C *29/04*

U.S. Cl. 568—899 10 Claims



1. A process for the continuous production of secondary butyl alcohol by the catalytic hydration of n-butenes with water in the presence of a strongly acidic cation exchange resin catalyst in a fixed bed reactor by passing the reactants over a catalyst in upstream flow at a temperature ranging from above 120° C. to 180° C., a pressure from about 40 to 200 bar, and a water/olefin mole ratio ranging from about 0.5 to 10 moles of water per mole of n-butenes, which comprises producing a vaporous overhead product stream comprising water and an organic mixture comprising secondary butyl alcohol and unreacted reaction gases n-butenes and butane, depressurizing and cooling said product stream to a pressure ranging from about 15 to 40 bar and a temperature ranging up to about 120° C. to liquefy said product stream, introducing said liquefied product stream into a separator to form an aqueous bottoms fraction and a liquid organic mixture comprising secondary butyl alcohol and reaction gases n-butenes and butane, separating said aqueous bottoms fraction from said separator, vaporizing said organic mixture to form an overhead vaporized organic mixture, depressurizing said overhead vaporized organic mixture to a pressure ranging from 3 to 8 bar, introducing said depressurized overhead organic mixture into a pressurized column to form a liquid bottoms fraction comprising secondary butyl alcohol and a vaporous reaction gas fraction, and recovering said secondary butyl alcohol as a liquid crude alcohol bottoms fraction containing less than 0.1 percent water.

4,476,334
METHANOL PRODUCTION METHOD AND SYSTEM

Michael J. Chen, Darien, and Jerome W. Rathke, Bolingbrook, both of Ill., assignors to The United States Department of Energy, Washington, D.C.

Filed May 26, 1983, Ser. No. 498,437

Int. Cl.³ C07C *29/00;* B01J *31/02*

U.S. Cl. 568—902 13 Claims

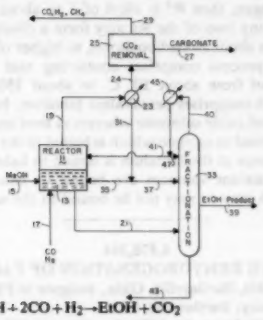
1. In a method of selectively producing ethanol from methanol, carbon monoxide and hydrogen in the presence of a transition metal carbonyl catalyst in accordance with the reaction $MeOH + 2CO + H_2 \rightarrow EtOH + CO_2$ substantially without the production of water, the improvement comprising:

including in organic solution having methanol solvent, a base selected from the group of metal salts consisting of the alkali metal and alkaline earth metal formates, bicar-

bonates and carbonates; in combination with a manganese carbonyl catalyst in said solution; and

contacting said solution with carbon monoxide and hydrogen to effect production of ethanol and carbon dioxide.

11. In a homogenous catalytic system in organic solvent including methanol and a transition metal carbonyl catalyst in solution for the conversion of methanol to ethanol in accordance with the reaction:



$$MeOH + 2CO + H_2 \rightarrow EtOH + CO_2$$

the improvement comprising:

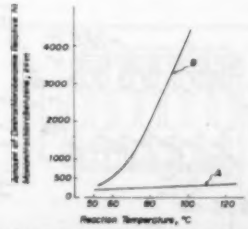
a manganese carbonyl catalyst in said solution; and

a base selected from the group of metal salts consisting of alkali metal carbonates, bicarbonates and formates and alkaline earth metal carbonates, bicarbonates and formates in said solution.

4,476,335
PROCESS FOR PREPARING MONONITROCHLOROBENZENE

Shinji Takenaka; Takeshi Nishida, and Joshiro Kanemoto, all of Fukuoka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,587
Claims priority, application Japan, Dec. 1, 1981, 56-191772
Int. Cl.³ C07C *79/12*
U.S. Cl. 568—937 **5 Claims**



1. A process for the preparation of mononitrochlorobenzene by nitration of chlorobenzene using a mixed acid of nitric acid and phosphoric acid as the nitrating agent, which comprises using a molar ratio of nitric acid to chlorobenzene of not more than equimol in the presence of a concentrated phosphoric acid as the phosphoric acid component and carrying out the nitration reaction at temperatures of 50°–120° C. while maintaining the concentration of phosphoric acid to 72.4% by weight as P_2O_5 or more during the reaction, the concentrated phosphoric acid containing various condensed phosphoric acids obtained by vapourizing and concentrating a normal orthophosphoric acid.

4,476,336
PROCESS FOR FORMING NITROPARAFFIN

Martin B. Sherwin, Potomac, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,859
Int. Cl.³ C07C *76/02*
U.S. Cl. 568—947 **22 Claims**

1. In a homogeneous gaseous phase nitration process for the formation of nitroparaffins by contacting in a reaction zone a hydrocarbon or mixture of hydrocarbons higher than methane, nitrogen peroxide and oxygen at elevated temperatures and at elevated pressures; cooling the reaction zone effluent; separating the resulting liquid phase effluent from the non-condensed gaseous effluent; separating the organic nitroparaffin containing phase from the liquid phase effluent; and recovering the nitroparaffin components; the improvement comprising contacting said hydrocarbon, nitrogen dioxide and oxygen reactants in said reaction zone in the presence of a small amount of up to about 20 percent by weight based on the hydrocarbon present in said reaction zone of (a) at least one C_2–C_{10} carboxylic acid or (b) a mixture of at least one C_2–C_{10} carboxylic acid and at least one oxygenated hydrocarbon.

4,476,337
METHOD FOR INTRODUCING FLUORINE INTO AN AROMATIC RING

Karl O. Christe, Calabasas, and Carl J. Schack, Chatsworth, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 343,033, Jan. 27, 1982, Pat. No. 4,423,260. This application Sep. 20, 1983, Ser. No. 534,030
Int. Cl.³ C07C *17/04*
U.S. Cl. 570—148 **4 Claims**

1. A process for adding flourine across the double bonds in a highly halogenated aromatic hydrocarbon which comprises the step of effecting an addition reaction between a highly halogenated aromatic hydrocarbon and a hydrogen fluoride solvent solution of NF_4BF_4.

4,476,338
OLEFINS FROM METHANOL AND/OR DIMETHYL ETHER

Clarence D. Chang, Princeton; Cynthia T. W. Chu, Pennington; Patrick D. Perkins, Titusville, all of N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,519
Int. Cl.³ C07C *1/20*
U.S. Cl. 585—322 **13 Claims**

1. A method for converting a feed to light olefins, said feed consisting essentially of one or more compounds selected from the group consisting of a lower monohydric alcohol with up to four carbon atoms and their simple and mixed ether derivatives, said method comprising passing said feed over a catalyst contained in a reaction zone at a space velocity of about 1 to about 100 LHSV with the temperature in said reaction zone at about 500° F. to about 1000° F. and a pressure of about 1 psia to about 15 psia, said catalyst comprising crystalline aluminosilicate zeolite ZSM-48, withdrawing from said reaction zone an effluent comprising a hydrocarbon mixture containing said light olefins.

4,476,339

DEHYDROGENATION PROCESS USING A RHODIUM CATALYST

Russell R. Reinhard, Hopewell Junction; Tansukhlal G. Dorawala, and Edwin R. Kerr, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 103,302, Dec. 13, 1979, Pat. No. 4,304,658. This application Feb. 5, 1981, Ser. No. 231,821

Int. Cl.³ C07C 5/333

U.S. Cl. 585—379 4 Claims

1. The method of dehydrogenating a hydrocarbon to form the corresponding olefin which comprises contacting at least one hydrocarbon selected from the group consisting of methylcyclopentane and isohexane, in the presence of steam at 700° F.–1150° F. and 0–300 psig and at steam-to-hydrocarbon mole ratio of 1–50:1, with a catalyst composition, having a pH of about 4.6–6.0, containing a porous support bearing a catalytic amount of a metal of Group VI B of the Periodic Table and of rhodium.

4,476,340

ARENE ALKYLATION WITH AKYL HALIDES USING METAL OXIDE-TANTALUM HALIDE/OXIDE CATALYSTS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 23, 1983, Ser. No. 535,100

Int. Cl.³ C07C 2/70

U.S. Cl. 585—462 10 Claims

1. A process for alkylating benzene and substituted benzenes with an alkyl halide selected from alkyl chloride, bromide or iodide having a carbon number ranging from 1 to about 30, which process comprises contacting said benzene or substituted benzene with said alkyl halide at a temperature ranging from about 0° to about 400° C. with a catalyst comprising pentavalent tantalum, halogen, oxygen and a metal oxide substrate wherein at least one valence of the tantalum is bound to oxygen which is bound to the substrate, at least one valence at the tantalum is bound to halogen and the remaining tantalum valences are bound to halogen and/or oxygen which may or may not be bound to the substrate.

4,476,341

BUTENE DIMERIZATION METHOD

Georges M. K. Mathys, Bierbeek, Belgium, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 30, 1983, Ser. No. 480,257

Claims priority, application United Kingdom, Apr. 6, 1982, 8210236

Int. Cl.³ C07C 2/24

U.S. Cl. 585—512 16 Claims

1. A method of producing octenes which comprises dimerising an n-butene using a homogeneous catalyst system formed in situ from a nickel compound, an organo aluminium compound, n-butene and hydrogen.

4,476,342

PREPARATION OF HIGHLY BRANCHED CHAIN OLIGOMERS

Mark J. O'Hara, and Tamotsu Imai, both of Mount Prospect, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 1, 1983, Ser. No. 510,480

Int. Cl.³ C07C 2/24

U.S. Cl. 585—514 12 Claims

1. A process for the preparation of a highly branched chain oligomer of an olefin-containing feedstock which comprises contacting said feedstock at a temperature in the range of from about 50° to about 350° C. and a pressure in the range of from about 100 to about 2500 pounds per square inch gauge with a catalyst comprising a fluorided aluminum phosphate, and recoving the resultant highly branched chain product.

4,476,343

OLEFIN OLIGOMERIZATION WITH TANTALUM HALIDE/OXIDE-METAL OXIDE CATALYSTS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 23, 1983, Ser. No. 535,102

Int. Cl.³ C07C 2/02

U.S. Cl. 585—530 9 Claims

1. A process for oligomerizing olefins of the following general formula $R^1R^2C{=}CR^3R^4$ where R^1, R^2 and R^3 are individually hydrogen or alkyl of 1 to about 20 carbon atoms and R^4 is alkyl of 1 to about 20 carbon atoms, unless all of R^1, R^2 and R^3 are hydrogen, then R^4 is alkyl of 1 to about 6, with the proviso that any two of the Rs may form a divalent alkylene moiety of 2 to about 20 carbon atoms, to higher olefinic oligomers which process comprises contacting said olefins at a temperature of from about 10° C. to about 350° C. with a catalyst which comprises pentavalent tantalum, halogen, oxygen and a metal oxide substrate wherein at least one valence of tantalum is bound to oxygen which is bound to the substrate, at least one valence at the tantalum is bound to halogen and the remaining tantalum valences are bound to halogen and/or oxygen which may or may not be bound to the substrate.

4,476,344

OXIDATIVE DEHYDROGENATION OF PARAFFINS

James B. Kimble, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 14, 1983, Ser. No. 541,935

Int. Cl.³ C07C 5/333

U.S. Cl. 585—661 8 Claims

1. A process for the catalytic oxidative dehydrogenation of a paraffin having from 2 to 5 carbon atoms comprising the step of contacting said paraffin under suitable oxidative dehydrogenation conditions with a catalyst composition comprising lithium, titanium and a promoter selected from the group consisting of molybdenum, tin and antimony, wherein the atomic ratio of lithium to titanium is above about 1.8:1.

4,476,345

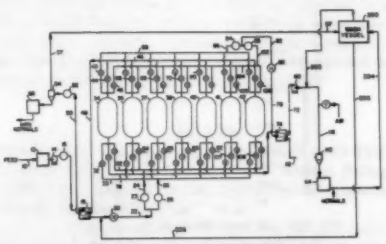
N-PARAFFIN-ISOPARAFFIN SEPARATION PROCESS USING WASH OF RECYCLE PURGE GAS

Robert L. Gray, Jr., Mahopac, and Thomas C. Holcombe, Scarsdale, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 14, 1982, Ser. No. 434,398

Int. Cl.³ C10G 25/00; C10C 7/12

U.S. Cl. 585—820 1 Claim



1. In a process for separating normal paraffins and non-normal paraffins from a vapor state mixture containing the same wherein

(i) said mixture is passed through in sequence a plurality of fixed beds an adsorbent system containing a zeolitic molecular sieve adsorbent which selectively adsorbs normal paraffins,

(ii) a non-sorbable purge gas is used to (a) desorb normals from each bed to provide an effluent containing desorbed

normals in mixture with purge gas and (b) transfer non adsorbed non-normal paraffins from each bed to provide a separate effluent containing non-normal paraffins in mixture with purge gas

(iii) the effluent of (ii) (a) is separated into a purge gas stream containing residuals of normals and a normal product stream and said purge gas stream recycled and

(iv) the effluent of (ii) (b) is separated into a purge gas stream containing residual non-normals and a non-normal product stream and said purge gas is recycled, the improvement for lowering the residual content of either the normals of non-normals of recycle purge gas which comprises washing the purge gas from a selected effluent of either (ii) (a) or (ii) (b) prior to recycle to the adsorbent system with a portion of the product stream from the non-selected effluent, the effluent of (ii) (a) being selected for the lowering of normals content and the effluent of (ii) (b) being selected for the lowering of non-normals content.

4,476,346
PHOTOVOLTAIC DEVICE

Yoshihisa Tawada, and Kazunori Tsuge, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 8, 1983, Ser. No. 465,016
Claims priority, application Japan, Dec. 14, 1982, 57-219862
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—249 **13 Claims**

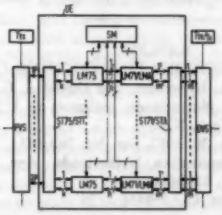
1. In a PIN junction photovoltaic device having a construction: electrode/PIN/electrode, said photovoltaic device being improved in that one of the electrodes is transparent and only the P or N layer positioned on the side opposite to incidence of light and on the side of the I-layer opposite the transparent electrode is a semiconductor having an optical band gap of not less than about 1.8 eV and a dark conductivity of not less than about 10^{-8} $(\Omega\text{-cm})^{-1}$ at 20° C.

10. The photovoltaic device of claim 1, having a stacked multi-layer structure where a plurality of PIN units each consisting of P, I and N layers are repeatedly provided.

4,476,347
METHOD AND CIRCUIT ARRANGEMENT FOR TRANSMITTING COMMUNICATION SIGNALS BETWEEN SWITCHING CENTERS OF FIRST AND SECOND SWITCHING NETWORKS OPERATING WITH DIFFERENT TRANSMISSION PROCEDURES

Rolf Hagen, Unterhaching, and Peter Weidner, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 8, 1983, Ser. No. 472,979
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1982, 3210439
Int. Cl.³ H04L *3/00, 23/00*
U.S. Cl. 178—3 **11 Claims**



1. In a method for transmitting communication signals formed by data signals and signaling information between subscriber stations which are connected via switching centers of a first switching network, including a line switching network which operates in accordance with a first transmission procedure and a second switching network including a packet switching network which operates in accordance with a second transmission procedure which is different from the first transmission procedure, and in which the two different transmission procedures are composed of network-independent procedure divisions containing the data signals and network dependent procedure divisions containing at least the signaling information, the improvement therein comprising the steps of:

assigning transmission lines of the first switching network to virtual channels of the second switching network;

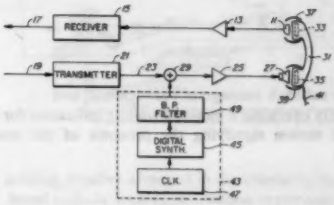
converting only those signal portions from one of the first and second switching networks effecting the execution of the network-dependent procedure divisions into signal portions which enable corresponding network-dependent procedure divisions in the other of the switching networks; and

combining the data signals in accordance with the network-independent procedure divisions in unaltered form with the converted signal portions for use by the other switching network.

4,476,348
CARBON MICROPHONE LINEARIZATION TECHNIQUE

Philip D. Wasserman, Cupertino, and Terry R. Seaver, San Jose, both of Calif., assignors to Anderson Jacobson, Inc., San Jose, Calif.

Filed Oct. 6, 1981, Ser. No. 309,031
Int. Cl.³ H04M *11/00;* **H04R** *3/00*
U.S. Cl. 179—2 C **12 Claims**



1. In an acoustic data coupler designed to transmit data over a telephone line having a voice band and having an input to receive digital signals from a source, a transmitter to convert the digital signals to audio signals within a transmitting bandwidth of the voice band, a loud speaker connected to said transmitter to make the audio signals audible, a microphone, a receiver connected to said microphone to convert audio signals received therefrom within a receiving bandwidth of the voice band to digital data signals, an output from said receiver carrying said digital signals, and an acoustic coupler adapted to hold a telephone hand set with a carbon granule microphone therein acoustically coupled to said speaker, the improvement comprising means connected to said speaker for applying thereto a correction signal simultaneously with a data containing audio signal from said transmitter, said correction signal having a frequency bandwidth outside of said transmitting and receiving bandwidths and of such a frequency so as not to cause undesirable intermodulation distortion products in either of the transmitting or receiving bandwidths with signals therein, said correction signal additionally having substantially a 1,000 Hz. bandwidth wherein the amplitude is substantially uniform, whereby a nonlinearity characteristic of said carbon granule microphone is reduced and distortion caused by such nonlinearity is also reduced.

4,476,349
CALL MESSAGE SERVICE

Jennie L. Cottrell, Arvada, and Deborah J. Hill, Thornton, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 30, 1982, Ser. No. 363,469
Int. Cl.³ H04M *1/57, 1/64, 3/50*
U.S. Cl. 179—18 B **39 Claims**

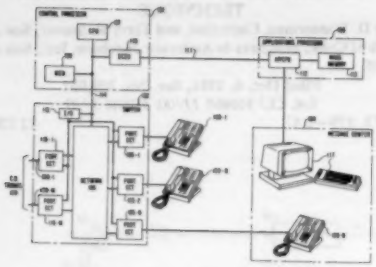
1. A method of providing call message service in a telephone system having a memory and serving a plurality of stations, comprising the steps of

after an off-hook state and before an on-hook state at a calling one of the stations on a call intended for a principal one of the stations, recognizing an activating signal from a station associated with the call as a request to store a callback message for the principal station,

identifying the station from which the activating signal was received,

automatically generating a callback message for the principal station, including in the callback message the identity

of one of the stations also having an association with the call and determined by a predetermined algorithm based on the station from which the activating signal was received,



storing the callback message in the memory, and

automatically operating a message waiting indication for the principal station signifying the presence of the stored message.

4,476,350

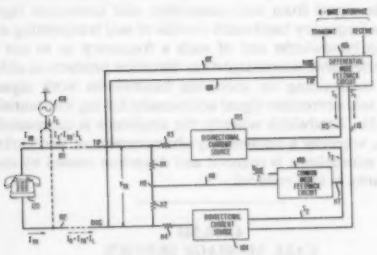
BATTERY FEED CIRCUIT

Denis W. Aull, Indianapolis, Ind., and Dewayne A. Spires, Plainfield, N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 234,684, Feb. 17, 1981,. This application Feb. 8, 1982, Ser. No. 346,585

Int. Cl.³ H04M *19/08*

U.S. Cl. 179—70 14 Claims



1. A battery feed circuit for a two-wire communication path characterized in that the battery feed circuit comprises:

means (**103, 104, 336, 337**) responsive to a control signal (S_0) for respectively generating first and second dc currents in first and second conductors of said path, said first and second currents being equal in magnitude and opposite in direction, said current generating means also varying said first and second currents by an equal amount in response to a second control signal to maintain a constant difference therebetween,

a first feedback means (**320–329, 350**) responsive to the differential mode voltage (V_{TR}) across the path for generating said control signal (S_0), and

a second feedback means (**109**) for generating said second control signal by monitoring the common mode voltage across the path.

4,476,351

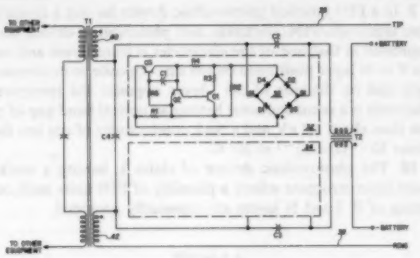
SUBSCRIBER LOOP CURRENT REGULATOR

Mark J. Beegle, Lisle, and Mark W. Grimes, Lombard, both of Ill., assignors to Rockwell International Corporation, Downers Grove, Ill.

Filed Mar. 25, 1982, Ser. No. 361,690

Int. Cl.³ H04M *19/00*

U.S. Cl. 179—77 6 Claims



1. A battery supply regulator circuit for supplying DC current to a telephone line, comprising:

means for sensing the magnitude of the DC current in said line;

controlling means for carrying a first portion of said current supplied to the line, and for controlling said portion in response to the magnitude sensed by said sensing means with the goal of maintaining the DC current flowing in said line near a preselected value;

a resistor (R2) for carrying substantially the remaining portion of the current supplied to the line, thereby dividing the power dissipation in the regulator circuit between the resistor and the controlling means; and

means for providing balance to the regulator connected to said sensing means, controlling means and resister (R2).

4,476,352

TELEPHONE SUBSCRIBER LINE LOOPING CIRCUIT

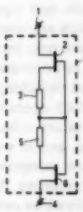
Frederik H. Gerritsen, Hilversum, and Daniël J. G. Janssen, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,683

Claims priority, application Netherlands, Apr. 1, 1981, 8101612; Jul. 20, 1981, 8103419

Int. Cl.³ H04M *1/76*

U.S. Cl. 179—81 R 2 Claims



1. A circuit for connection between the conductors of a subscriber's line via a hook contact and in parallel with a further portion of a subscriber's set, the circuit having a relatively low resistance to currents of less than a predetermined value and a relatively high resistance to currents greater than the predetermined value, comprising a series arrangement of the main current path of a first field effect transistor, a first resistor, a second resistor, and the main current path of a second field effect transistor, connected in that order, and the

control electrodes of the first and second field effect transistors being connected to the junction of the first and second resistors, the resistors having a value such that in normal operating conditions the circuit conducts a current which is low compared with a minimum line current.

4,476,353

HEARING AID DEVICE TO BE WORN IN THE EAR

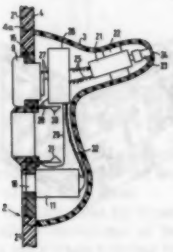
Christof Haertl, Neunkirchen am Brand, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 350,577

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 8106942[U]

Int. Cl.³ H04R *25/02*

U.S. Cl. 179—107 E **5 Claims**



1. A hearing aid to be worn in the ear comprising a housing which is formed of first and second shells, the first shell having outside contours of an individually fitted ear adapter and having a wall configuration with an outer edge at an open side thereof; and the second shell having separate carrier means penetrated by access openings, having a microphone and a battery holder, and having operating elements of an operating hearing aid circuit at said access openings, said second shell being attached at the open side of the first shell so as to close the first shell; an earpiece receiver in a cushioned support mount in the first shell; the second shell being in the form of a cover plate, said cover plate being secured with said first shell and having a recess which opens toward said first shell; said carrier means comprising a unitary carrier plate receiving the microphone, the battery holder and the operating elements, and being disposed in said recess of said cover plate; said unitary carrier plate having the same shape as said recess; said cover plate having an outside surface with a dimension which at least suffices to cover the first shell up to the outer edge of the wall configuration of the first shell, even for the largest fitted dimension of the first shell; and the recess of the cover plate having maximum dimensions which fit within the open side of the first shell given the smallest outside contours of the first shell to be expected; and the cover plate having a plate-shaped edge forming a perimeter of the second shell which may be cut off so as to conform with the perimeter at the open side of the first shell.

4,476,354

TELEPHONE DEVICE

Yasuhito Uchino, and Hisashi Miyajima, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 10, 1982, Ser. No. 406,914

Claims priority, application Japan, Aug. 13, 1981, 56-127159; Aug. 13, 1981, 56-120368

Int. Cl.³ H04M *1/06*

U.S. Cl. 179—189 R **3 Claims**

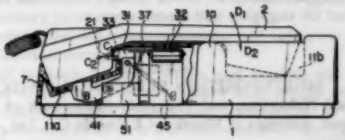
1. A telephone device comprising:

a telephone body having a surface provided with a setting recess;

a transmitter-receiver having a transmitter section and a receiver section and to be mounted on the telephone body by setting the transmitter and receiver sections into the setting recess, the transmitter-receiver having an engaged portion formed on one side thereof;

a locking mechanism arranged in the telephone body to project into the setting recess and engaged with the engaged portion of the transmitter-receiver set in the setting recess to prevent the transmitter-receiver from coming out of the setting recess and to urge the transmitter-receiver through the engaged portion in one direction;

a lifting mechanism arranged to project into the setting recess and to which an urging force is charged by the transmitter-receiver, when set in the setting recess, to urge the transmitter-receiver in a direction in which the transmitter-receiver comes out of the setting recess; and



a holding member arranged in the telephone body and combined with the locking mechanism to prevent the transmitter-receiver from moving in a direction and floating from the telephone body, wherein

said engaged portion is an engaged recess formed in one end face of one of said transmitter and receiver sections and said holding member is a wall face in contact with the other end face of the one of said transmitter and receiver sections, and the one of said transmitter and receiver sections is sandwiched between said wall face and said locking mechanism, and wherein

said locking mechanism includes a rotatable lock lever having a claw at one end thereof to engage with the engaged recess, a spring for urging the lock lever in a direction in which its claw is engaged with the engaged recess, and means for rotating the lock lever in the reverse direction against the action of said spring.

4,476,355

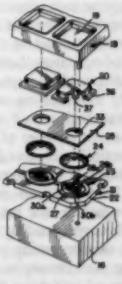
KEYBOARD ASSEMBLY

Dennis M. Mital, Western Springs, Ill., assignor to Grayhill, Inc., LaGrange, Ill.

Continuation-in-part of Ser. No. 319,388, Nov. 9, 1981, abandoned. This application Nov. 3, 1983, Ser. No. 548,500

Int. Cl.³ H01H *13/70, 1/00*

U.S. Cl. 200—5 A **8 Claims**



1. In a keyboard assembly including a printed circuit board having conductive paths defining at least one switch site having spaced first and second flat-surfaced contacts connectable in a circuit, a conductive dome-shaped resilient element dis-

posed on and coacting with the switch site, means retaining said element in aligned relation to said switch site, the periphery of said element continually engaging said first contact and the central area thereof contacting the second contact to electrically connect said contacts when the element is depressed and tripped, and a button actuator in registry with the element for depressing and tripping same, the improvement being in said dome-shaped element which comprises a dome-shaped body, a centrally disposed dimple projecting upwardly from the top side of said body for engagement with said button actuator, said dimple being formed to define a flat upper surface for engagement by said actuator, and a continuous annular flared skirt of limited dimension and constant width at the periphery of said body defining a substantially flat surface for slidable engagement with said flat-surfaced first contact, said body being dome-shaped between said dimple and said skirt, said dimple defining a circular contact area when the dome is tripped for engaging said second contact.

4,476,356

MULTI-POSITION ELECTRICAL SWITCH

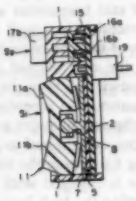
Kiyoshi Nakayama, and Tadayoshi Muto, both of Shizuoka, Japan, assignors to Murakami Kaimeido Co., Ltd., Shizuoka, Japan

Continuation-in-part of Ser. No. 434,519, Oct. 15, 1982,. This application Sep. 19, 1983, Ser. No. 533,296

Claims priority, application Japan, Oct. 16, 1981, 56-152866

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—6 A **6 Claims**



1. A multi-position electrical switch comprising:

a housing

an electrical insulating base plate disposed in the bottom of said housing,

printed circuit electrodes arranged on said base plate so that a pair of electrodes is respectively disposed on each side of a rectangle,

a pressure-sensitive conductive rubber sheet laminated on the upper portion of said printed circuit electrodes and forming power source polarity changing switches by contacting and pressing said electrodes,

a supporting plate disposed over said rubber sheet, having a ball of a ball-and-socket joint at the center thereof and having a plurality of openings therein,

an operating button disposed in a space surrounded by said housing and tiltably mounted on said ball, the section of said operating button facing said supporting plate being formed in the shape of a frustum of a pyramid and having its vertex on the vertical axis of said ball-and-socket joint, each of the four faces of said pyramidal section of said operating button having raised pressing surfaces, said pressing surfaces engaging said rubber sheet at points by protruding through corresponding openings in said supporting plate when said operating button is tilted, the ball of said joint having pins crosswise of the vertical axis of said ball, the socket of said joint having grooves corresponding to said pins, said grooves being slightly narrower than the diameter of said pins, said pins and said grooves coacting to urge said operating button toward its untilted position.

4,476,357

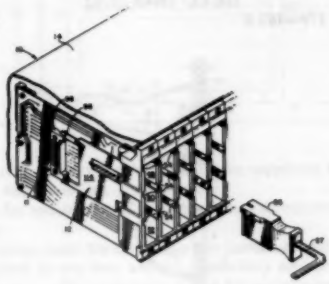
SWITCHING APPARATUS EMPLOYING CONDUCTOR CONTRACTS ON A MOVABLE ELASTOMERIC MEMBER

Floyd L. Malmborg, Brookfield Ctr., and Stanley S. Strengowski, Monroe, both of Conn., assignors to T-Bar Incorporated, Wilton, Conn.

Filed Sep. 28, 1982, Ser. No. 425,245

Int. Cl.³ H01R *19/50*

U.S. Cl. 200—51.09 **7 Claims**



1. A switching apparatus for making or breaking a plurality of electrical connections simultaneously, comprising:

a printed circuit board supporting a plurality of generally parallel conductor segments, each conductor segment having aligned first and second electrically conductive tracks separated by an electrically insulating gap such that portions of the tracks adjacent the gaps are in generally parallel columns and the gaps are aligned in a column transverse to the conductor tracks;

switch means provided by an elastomeric member supported on a rigid support member, said elastomeric member having at least a plurality of conductor strips sufficient to and positioned to separately bridge the respective gaps of the supported conductor segments when the elastomeric member is positioned against the printed circuit board;

support posts supported on the printed circuit board for supporting and aligning the support member for the elastomeric member relative to the printed circuit board and for permitting movement of the elastomeric member in the same repeatable pattern time after time toward and away from the printed circuit board such as to cause the conductor strips to contact the printed circuit board in essentially the same position time after time;

spring biasing means acting between the rigid support member for the switch means and the support posts for normally urging the elastomeric member into the printed circuit board so that the conductor strips engaging the conductor segments and bridge the gaps to permit electrical connections through the conductor segments; and

actuator means movably supported relative to the printed circuit board and cooperable with the support member for the elastomeric member for moving the elastomeric member against the bias of the spring biasing means away from the printed circuit board and away from the conductor segments.

4,476,358
TOUCH PAD INDICATING ARRIVAL DURING SWIMMING CONTESTS

Augusto Capecchi, Via Byron 16/9, Genoa, Italy

Continuation of Ser. No. 341, Jan. 2, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,742
Int. Cl.³ H01H *1/18, 3/02*
U.S. Cl. 200—52 R 1 Claim

1. A touch pad for swimming competitions for mounting partially submerged on the finishing wall of a swimming pool consisting of:

an insulating back plate for mounting adjacent the pool wall,

a striker plate perforated to allow the free flow of water mounted in front of said back plate,

a frame attached to the back plate for loosely mounting the striker plate to allow movement of said striker plate towards said back plate when touched by a swimmer.

a plurality of conductive strips mounted onto the insulating back plate with said strip being formed in sets of three with the center strip of each set being electrically connected and with the outer pair of each set being electrically connected,

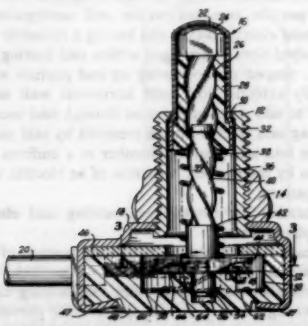
a plurality of conductive springs welded onto the central strips shaped as seagull wings to act as resilient spacers between the striker plate and the insulating plate and to act as self cleaning electrical contacts between the center strip and the outer pair and,

water proofing means on the strips and spring except in the contact zones.

4,476,359
PUSH-BUTTON ELECTRICAL SWITCH WITH UNITARY SPIRAL STEM AND WASHER

Wolfgang F. Bienwald, Melville, N.Y., assignor to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,965
Int. Cl.³ H01H *3/00*
U.S. Cl. 200—156 8 Claims



1. An improved push-button electrical switch, comprising:

a housing;

a set of wires extending from a first portion of said housing for connection to an external circuit;

a push-button member extending from a second portion of said housing;

spring disposed between said push-button member and an internal portion of said housing for keeping said push-button member extended from said housing, said push-button member being operatively connected with

means for converting linear motion to rotary motion comprising a unitary piece having a spiral stem portion and a driving washer portion, said push-button member including an elongated insert member forming an elongated spiral hole adapted to receive said spiral stem portion during axial linear operation of said unitary piece, and a stop means for preventing said push-button member and said insert member from rotating during linear axial operation of said unitary piece, said driving washer portion of said unitary piece cooperating with

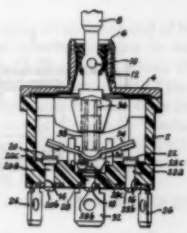
a commutator having rotary movement and means for making electrical connection to

a pair of contacts disposed within said housing and connected to said set of wires whereby axial motion of said push-button member causes said commutator to have rotary movement so as to alternately connect and disconnect said pair of contacts.

4,476,360
TERMINAL SEAL FOR ELECTRIC SWITCH

Walter C. Theurer, Bradenton, Fla., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 15, 1982, Ser. No. 449,930
Int. Cl.³ H01H *9/04*
U.S. Cl. 200—302.1 7 Claims



1. In an electric switch having a housing comprising a hollow molded insulating base closed by a sealed cover to provide a switch compartment, stationary and movable contacts in said compartment, and an actuator for actuating the movable contact into and out of engagement with said stationary contacts, and holes in said base through which said stationary contacts are connected to terminals for connecting said switch to an external circuit, the improvement comprising:

means sealed to said base and extending through said holes for connecting said stationary contacts to the respective terminals, each comprising:

an electrical connector having an enlarged upper end portion which forms a part of or to which said stationary contact is attached and a reduced cross-section shank portion extending through one of said holes to the corresponding external terminal;

each said hole in said base having a correspondingly enlarged upper end portion to closely surround said enlarged upper end portion of said connector and a correspondingly reduced portion extending down therefrom through said base to closely accommodate said shank portion of said connector, and a surface between said enlarged and reduced portions of said hole having a rounded bump at the lip of said reduced portion of said hole;

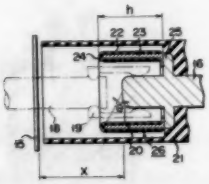
and the lower surface of said enlarged upper end portion of said connector being provided with an angular undercut surface extending inwardly and upwardly at a predetermined angle with the horizontal plane and overlying said rounded bump for causing cold flow of said rounded bump of said molded insulating base when said connector is clamped tight and secured to said external terminal thereby to form a tight seal around said connector.

4,476,361

DISCONNECT CONTACT ASSEMBLY

Nobuo Masaki, Fuchu, and Tetsuo Yoshida, Fussa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 17, 1981, Ser. No. 293,236
Claims priority, application Japan, Aug. 18, 1980, 55-116034
Int. Cl.³ H01H 9/00, 9/42, 33/16
U.S. Cl. 200—305 4 Claims



1. A disconnect contact assembly comprising:

a tubular insulator having a bottom and an open end; a grounded shutter plate provided at the open end of said tubular insulator for closing said open end;

a stationary arm fixed on said bottom and having a contact end protruding into said cylindrical insulator along the axial direction;

an electric field moderating ring surrounded in a radially-spaced relationship by said tubular insulator and surrounding and electrically connected to said stationary arm and protruding for a predetermined distance from said contact end of said stationary arm toward said grounded shutter plate but which does not extend to the level of the open end of said tubular insulator to have a sufficient clearance of insulation from said grounded shutter plate; and

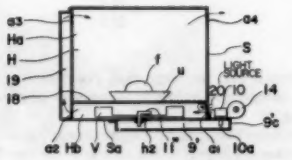
a movable arm reciprocally movable along said axial direction between one position at which the movable arm comes into contact with said contact end of said stationary arm while said grounded shutter plate is open and another position at which the movable arm is out of said cylindrical insulator while said grounded shutter plate is being closed wherein said stationary arm and movable arm are surrounded in a radially-spaced relationship by said electric field moderating ring.

4,476,362

HIGH FREQUENCY HEATING APPARATUS

Shigeru Kusunoki, Yamatokoriyama, and Hirofumi Yoshimura, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 223,149, Jan. 7, 1981, abandoned, which is a continuation of Ser. No. 964,446, Nov. 28, 1978, abandoned, which is a continuation of Ser. No. 685,166, May 11, 1976, abandoned. This application Jan. 24, 1983, Ser. No. 460,553
Claims priority, application Japan, May 19, 1975, 50-60392; Jul. 17, 1975, 50-88182; Jul. 18, 1975, 50-88750; Sep. 29, 1975, 50-117960; Oct. 27, 1975, 50-129486; Nov. 10, 1975, 50-135356
Int. Cl.³ H05B 6/72
U.S. Cl. 219—10.55 F 14 Claims



1. A high frequency heating apparatus comprising:

a heating cavity for placing therein an object to be heated, said heating cavity being formed in a substantially cubic box-like configuration and having a set of horizontal walls and a set of vertical walls;

an electric wave supplying means for supplying electric waves of a predetermined frequency into said heating cavity, said electric wave supplying means having a high frequency oscillator for producing said electric waves;

a waveguide mounted on one of said set of horizontal walls and extending along said wall, said waveguide being interconnected with said heating cavity through an aperture which is provided at a center portion of said wall and having dimensions which are smaller than $\frac{1}{4}$ wavelength of said frequency of said electric waves from said high frequency oscillator so as to prevent a loose coupling of electric waves between said waveguide and said heating cavity when no object is within said aperture;

an electric wave coupling means provided between said heating cavity and said waveguide passing through said aperture and having an insulating material for separating said electrical wave coupling means from said heating cavity and said waveguide, said coupling means having a substantially non-symmetric configuration and having a receiving portion arranged within said waveguide for receiving said electric waves and having a rotatable radiating L shaped portion arranged within said heating cavity, said L shaped portion being an end portion which substantially extends along said horizontal wall and is connected to said receiving portion through said aperture for radiating said electric waves received by said receiving portion into said heating chamber in a uniform heat distribution by the periodic variation of an electric wave radiation pattern;

a support member for rotatably supporting said electric wave coupling means;

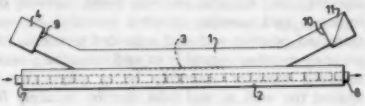
a driving means for rotating said radiating portion of said electric wave coupling means; and,

a dielectric member disposed between said heating cavity and said waveguide within said aperture for preventing passage of unwanted matter from entering said waveguide yet allowing passage of said electric waves from said electric wave coupling means.

4,476,363
METHOD AND DEVICE FOR HEATING BY MICROWAVE ENERGY

Benny Berggren, Vällingby, and Ytgve Häsler, Lidingö, both of Sweden, assignors to Stiftelsen Institutet For Mikrovagsteknik Vid Tekniska Hogskolan i Stockholm, Stockholm, Sweden

Continuation of Ser. No. 218,639, Dec. 22, 1980, abandoned.
This application Sep. 2, 1983, Ser. No. 528,791
Claims priority, application Sweden, Jan. 3, 1980, 8000059
Int. Cl.³ H05B 6/70
U.S. Cl. 219—10.55 A **19 Claims**

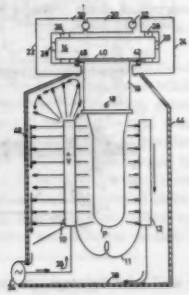


1. A device for heating objects by means of microwave energy, comprising a first feed waveguide with a generator for the supply of microwave energy to said first waveguide, comprising an additional second load waveguide, located adjacent the first waveguide so that the two waveguides at least along a certain distance are parallel and have a partition wall in common, in which partition wall an elongated coupling aperture means is located, said elongated coupling aperture means having a length, by means of which length a coupling of microwave energy distributed in the wave propagation direction of the waveguides takes place from one of said waveguides to the other one and that the load waveguide is dimensioned so that it, when under a no load condition, has a wave phase constant sufficiently different from that of the feed waveguide so that essentially no energy is coupled from the feed waveguide to the load waveguide and also, by action of intended load in the form of objects to be heated in the load waveguide, to conduct microwave energy with the same wave phase constant as the first feed waveguide.

4,476,364
RADIO FREQUENCY HEATING SYSTEM FOR HEATING THERMOPLASTIC MATERIAL PREFORMS

Stephane C. Prevot, and Suppayan M. Krishnakumar, both of Nashua, N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Oct. 6, 1981, Ser. No. 308,977
Int. Cl.³ H05B 9/04
U.S. Cl. 219—10.81 **14 Claims**

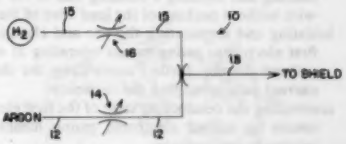


1. A heating system for heating thermoplastic material preforms within a high frequency oven cavity to a blow molding orientation temperature, said heating system comprising said oven cavity being defined in part by transversely spaced apart separate electrically conductive walls, a pair of applicator plates arranged in a side-by-side transversely spaced relation within said oven cavity between said walls and in spaced adjacent relation thereto, conveyor means for continuously moving thermoplastic material preforms between said applicator plates, said conveyor means including pallets mounted for movement along a path and each pallet carrying a plurality of collets having means for retaining therein neck portions of depending preforms, a source of radio frequency energy connected to said applicator plates and to said oven walls, said pallets and said collets being formed of metal and being subjected to radio frequency energy directed to said applicator plates, said system including an electrical sliding contact system and said pallets being electrically connected through sliding contacts of said contact system to said walls of said radio frequency oven cavity.

4,476,365
COVER GAS CONTROL OF BONDING BALL FORMATION

John A. Kurtz, Gorham, and Donald E. Cousens, Saco, both of Me., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Oct. 8, 1982, Ser. No. 433,448
Int. Cl.³ B23K 31/00
U.S. Cl. 219—56.22 **16 Claims**



1. In a method for forming a ball at the end of lead wire held in a bonding tool of a ball bonding machine for ball bonding of the lead wire to a die pad an integrated circuit chip including the steps of substantially enclosing the end of the lead wire in a shield, flooding the shield and the end of the lead wire with a flow of inert cover gas, and electrically discharging an arc between the lead wire and the shield for melting and forming the ball at the end of the lead wire, the improvement comprising:

generating a flow of hydrogen gas separate from said inert cover gas;

mixing the flow of hydrogen gas with the flow of inert cover gas at a location upstream from the shield a sufficient distance to permit substantially complete mixing of the hydrogen and inert cover gas upon reaching the shield;

and controlling the percent by volume of hydrogen comprising the cover gas mixture to substantially eliminate oxidation during the ball forming process.

4,476,366
CONTROLLED BONDING WIRE BALL FORMATION

John A. Kurtz, Gorham; Donald E. Cousens, Saco, and Mark D. Dufour, Portland, all of Me., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Feb. 1, 1983, Ser. No. 463,033
Int. Cl.³ B23K 31/00
U.S. Cl. 219—56.22 **28 Claims**

22. A method for forming a bonding ball at the end of lead wire held in the capillary wire holding tool of a ball bonding machine including a movable shroud or shield for substantially enclosing the end of the lead wire in the shroud for flooding the end of the lead wire with a cover gas during bonding ball formation comprising:

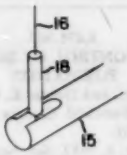
coupling and applying the positive polarity of a relatively high DC voltage to the shroud while coupling and applying the corresponding negative or ground polarity of the

relatively high DC voltage to the lead wire thereby constituting the lead wire a cathode in an electrical arc circuit and drawing an arc of electrons from the tip of the lead wire to the shroud for initiating a charging current;

coupling a capacitor in series between the relatively high DC voltage and the shroud and charging the capacitor with said charging current thereby limiting the duration of the arc and charging current to a current pulse upon completion of charging of the capacitor and thereby controlling the profile of the current pulse;

limiting the amplitude of said current pulse by interposing an impedance in the arc circuit;

selecting the values of the capacitor and impedance to provide a time constant for controlling the current pulse



duration and amplitude within selected ranges for rapidly melting and forming a bonding ball at the tip of the lead wire without necking of the lead wire of the bonding ball;

initiating and terminating the arc and charging current by first electronic gating means operating at relatively high voltage thereby further controlling the duration of the current pulse charging the capacitor;

controlling the conducting state of the first electronic gating means by second electronic gating means operating at relatively low voltage;

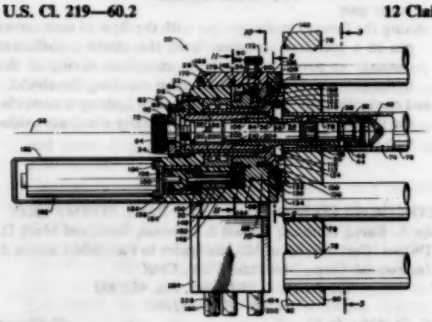
and coupling the second electronic gating means and first electronic gating means through a voltage isolating coupling thereby isolating and decoupling the relatively low voltage from the relatively high voltage.

4,476,367

FRONT FACE TUBE TO TUBE SHEET WELDING APPARATUS

Gasparas Kazlauskas, 10219 Briarwood Dr., Los Angeles, Calif. 90024

Filed Nov. 29, 1982, Ser. No. 445,090
Int. Cl.³ B23K 9/00
U.S. Cl. 219—60.2 **12 Claims**



1. A welding apparatus for welding of a plurality of assembled tubes to the front face of a tube sheet comprising:

a welding head housing having an internal chamber, said welding head housing having a front surface and a rear surface;

a securing mandrel assembly mounted on said welding head housing and protruding from said front surface, a portion of said protruding mandrel assembly to be located within a particular tube that is to be welded to said tube sheet, said protruding mandrel assembly having an exterior wall, a securing member assembly mounted upon said protruding mandrel assembly, said securing member assembly being movable between a retracted position and an extended position, said extended position being when said securing member assembly extends exteriorly of said exterior wall, said retracted position being when said securing member assembly is confined within said protruding mandrel assembly;

an actuator assembly connected to said securing member assembly, said actuator assembly being manually operable to move said securing member assembly between said retracted position and said extended position, with said securing member assembly in said extended position said securing member assembly being physically pressed against the wall of said tube thereby securely fixing in position said welding head housing in respect to said tube sheet; and

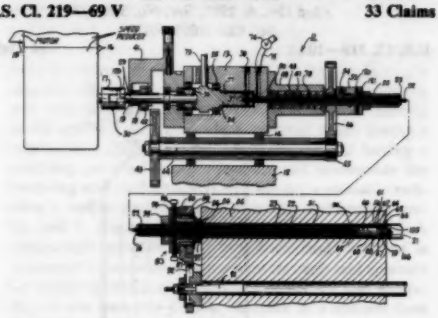
said securing member assembly comprising a plurality of balls, said actuator assembly comprising a sleeve which is lineally movable within said protruding mandrel assembly, said sleeve including a cam means, said cam means connecting with said balls, movement of said sleeve causes lineal movement of said balls from said retracted position to said extended position, said sleeve being connected to a manually turnable knob, said sleeve being threadably connected to said welding head housing, rotation of said sleeve by manual turning of said knob results in said lineal movement of said sleeve relative to said welding head housing through said threaded connection, selecting the amount of turning of said knob varies the amount of force said balls exert against the wall of said tube so as to assure tight engagement with each and every said tube regardless of slight variations in the diameters of said tubes.

4,476,368

INNER WALL TUBE DISINTEGRATOR

Fred W. Cammann, Rocky River; John Nester, North Olmsted, and Jere H. Roach, Rocky River, all of Ohio, assignors to Cammann Manufacturing Company, Inc., Bay Village, Ohio

Continuation-in-part of Ser. No. 234,707, Feb. 17, 1981, abandoned. This application Nov. 12, 1981, Ser. No. 320,208
Int. Cl.³ B23P 1/02
U.S. Cl. 219—69 V **33 Claims**



1. An inner wall tube disintegrator comprising, in combination:

a frame;

support means on said frame adapted to be longitudinally fixed relative to a tube having a portion to be disintegrated;

mounting means for mounting a disintegrator electrode relative to said support means and adapted to have the electrode positioned within the tube;

means to relatively insulate said electrode mounting means from said tube;

means to supply disintegrator current to said electrode mounting means relative to the tube for disintegrator arcing between the tube and the electrode;

drive means to establish motion of the electrode laterally toward and away from the inner wall of the tube to intermittently draw disintegrator arcs between the electrode and the inner wall of the tube;

means separate from said drive means to establish feed movement of the electrode, as the tube wall is disintegrated, toward the remaining portion of the tube wall; and

means for restricting said intermittent motion to a given transverse path to have the electrode engage the inner wall of the tube at substantially only one arcuate disintegrator area less than 360° of the inner periphery of the tube.

4,476,369

EDM METHOD OF AND APPARATUS FOR MACHINING CAVITIES USING A PLURALITY OF INDEPENDENTLY MOVABLE SEGMENTED ELECTRODES

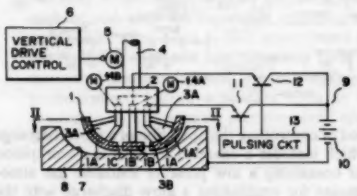
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Oct. 6, 1982, Ser. No. 433,003

Claims priority, application Japan, Oct. 8, 1981, 56-160477

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 M **11 Claims**



1. An EDM method of machining the surfaces of a cavity in an electrically conductive workpiece, the method comprising the steps of:

(a) bringing at least partially into a cavity in an electrically conductive workpiece an electrode assembly comprising a plurality of segmented electrodes having their respective machining surfaces which collectively form a contour corresponding in shape to said cavity, said segmented electrodes being supported so as to be generally spaced apart and movable relative to each other in said assembly; and

(b) electrically energizing said segmented electrodes individually with respect to said workpiece while individually displacing said segmented electrodes, generally independently of one another, relative to said workpiece, along respective predetermined paths of translational motion, thereby permitting electrical discharges to develop between each of said surfaces of the cavity and the machining surface of each of said segmented electrodes brought proximate thereto across a fluid-filled machining gap during said individual translational motion thereof.

4,476,370

METHOD AND APPARATUS FOR SHAPING BEADS OF WELDED STEEL SECTION

Moriyuki Kakihara, Chiba, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 11, 1982, Ser. No. 348,312

Int. Cl.³ B23K *31/08*

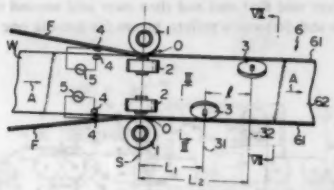
U.S. Cl. 219—78.16 **3 Claims**

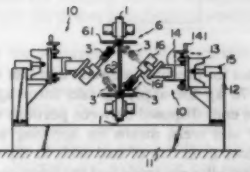
1. In an apparatus for producing steel sections by electric resistance welding, an apparatus for shaping weld beads of welded steel sections, comprising:

(a) rotatable bead shaping rolls in a passage of the steel section formed by welding flange strips to widthwise edges of a web strip, the circumferential surfaces of the bead shaping rolls being adapted to directly contact the beads formed by the welding;

(b) web support guides;

(c) holders for said web support guides and said rotatable bead shaping rolls, said holders including support blocks which are provided with guide grooves in which a pair of





arms are slidably mounted, the rotatable bead shaping rolls being attached rotatably to one end of a respective one of said arms, another end of said arms being pivotally attached to the support blocks by pins, at least one bolt being operatively urged against tip ends of the arms to selectively move the rotatable bead shaping rolls relative to the support blocks so as to position the rotatable bead shaping rolls such that the circumferential surfaces thereof are urged directly against the weld beads; and

(d) a frame supporting each of said holders, said holders being vertically movable relative to a respective one of said frames.

4,476,371

ELECTRICAL RESISTANCE SEAM WELDING METHOD AND APPARATUS

Peter Schreiber, Nidau, Switzerland, assignor to Fael S.A., Saint-Blaise, Switzerland

Filed Jun. 15, 1983, Ser. No. 504,488

Claims priority, application Switzerland, Feb. 15, 1983, 829/83

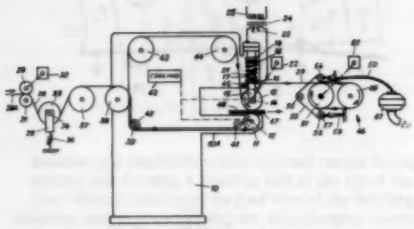
Int. Cl.³ B23K *11/06*

U.S. Cl. 219—83 **13 Claims**

1. An electrical resistance seam welding method in which a continuous wire electrode is passed successively over a first electrode reel and over a second electrode reel, via a plurality of guide and deflection rollers, said wire electrode passing over said reels in confronting relationship and being pressed together by said reels, by a predeterminded welding force, against interposed workpieces to be seam welded together, an electric current being applied which passes from one of said reels to the other of said reels through said wire electrode and said interposed workpieces, said wire electrode being motor driven for feeding the workpieces through said reels, the improvement comprising utilizing a copper wire as said wire electrode having a tensile strength at the elastic limit of between 11 and 13 kg-f/mm^2 and having a percentage elongation

at break in the range of 26 and 17% pressing said reels together by a force of 60 to 70 kg, said copper wire being subject to a tensile stress of less than 10 kg-f/mm^2 while passing over and between said reels, and maintaining said reels at an operating temperature of 10° to 30° C., so that a maximum elongation of said wire of 6% when passing over said first reel, and a maximum further elongation of said wire of 6% when passing over said second reel, is obtained.

8. An electric resistance seam welding apparatus including a frame having edge confronting first and second electrode reels and as well as guide and deflection rollers rotatably mounted thereon, a continuous wire electrode arranged for successively passing over said first reel and then over said second reel via said guide and deflection rollers, means for driving one of said



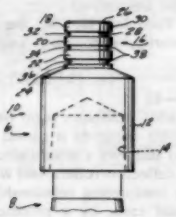
reels, means for pressing said reels together by a welding force of 60 to 70 kg for applying said force against overlapping workpiece ends disposed between portions of said wire which pass over said reels, means for applying an electric current which passes from one of said reels to the other of said reels through said wire electrode and the interposed workpiece ends for seaming them together, means for cooling said reels to an operating temperature in the range of 10° to 30° C., said wire electrode comprising a copper wire having a tensile strength at the elastic limit of 11 to 13 kg-f/mm^2 and a percentage elongation at break in the range of 26 to 17%, before passing over said first reel, said driving means rotating said second reel which, by means of said copper wire, rotates said first reel, whereby said copper wire between said reels is subject to a tensile stress of less than 10 kg-f/mm^2.

4,476,372

SPOT WELDING ELECTRODE

Bryan P. Prucher, 52 N. Main, Clarkston, Mich. 48016

Filed Feb. 4, 1983, Ser. No. 464,033
Int. Cl.[3] B23K *35/02*
U.S. Cl. 219—120 11 Claims



1. A spot welding electrode comprising:

a plurality of co-axially spaced first sections, each having a first predetermined sized cross section;

a plurality of second sections each integrally and co-axially formed with and interposed between adjacent first sections, each of the second sections having a second predetermined sized cross section smaller than the first cross section of the first sections;

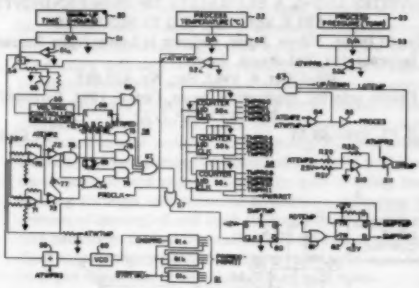
the outer side surfaces of the second section forming undercut areas between the outer side surfaces of adjacent first sections, the outer side surfaces of the second sections serving as cleavage surface to remove excess material formed at the peripheral edges of the adjacent first section caused by deformation of successive first sections during repeated welding operations.

4,476,373

CONTROL SYSTEM AND METHOD OF CONTROLLING ION NITRIDING APPARATUS

Nicholas F. D'Antonio, Liverpool, N.Y., assignor to Wellman Thermal Systems Corporation, Shelbyville, Ind.

Division of Ser. No. 949,219, Oct. 6, 1978, Pat. No. 4,331,856.
This application Jan. 25, 1982, Ser. No. 342,643
Int. Cl.[3] B23K *9/00*; H05B *1/02*
U.S. Cl. 219—121 P 4 Claims



1. A method of controlling the operation of a glow discharge apparatus which includes a chamber to receive a workpiece, said chamber containing a low pressure ionizable gas atmosphere and means for establishing a glow discharge with the workpiece connected as the cathode; said method including the steps of:

providing a series of electrical reference signals having a frequency based on a desired time related increase in the temperature of the workpiece;

counting the reference signals and generating a cumulative count signal representative of a cumulative count of said reference signals;

measuring the workpiece temperature and generating a measured temperature signal representative of the measured workpiece temperature;

comparing said cumulative count signal and said measured temperature signal concurrently; and

providing electrical energy to the glow discharge at a level reflecting the comparison result.

4,476,374

ROTARY INDEXING LASER MIRROR APPARATUS

Joseph P. Saggese, Melrose, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Jan. 24, 1983, Ser. No. 460,157
Int. Cl.[3] B23K *27/00*
U.S. Cl. 219—121 LB 7 Claims

1. Indexing apparatus for circumferentially indexing a rotary shaft to a plurality of predetermined operative radial positions comprising:

(a) a support table;

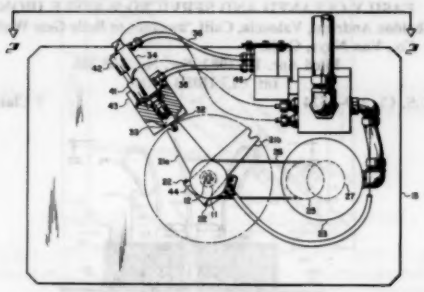
(b) a bearing member carried by said table;

(c) a main shaft rotatably journaled and supported in said bearing member and having first and second end portions extending in opposite directions through said table and said bearing member;

(d) a plurality of radially extending arms each circumferentially adjustable carried one above another on the first end portion of said main shaft, each arm having a recess at its end remote from said shaft;

(e) gripping means carried by each arm for securing each of said arms to said shaft at a different one of said predetermined radial operative positions;

(f) driving means carried by said table and coupled to said shaft for selectably rotating said shaft to approximately



any one of said plurality of predetermined operative radial positions; and

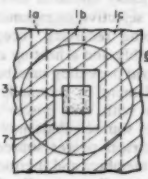
(g) locking means carried by said table and associated with each of said arms for separately engaging the recess of each of said arms when in their approximate radial operative position, each said locking means upon engaging its associated arm moving said arm and locking it in its said predetermined operative position upon its having been rotated to its approximate predetermined operative position by said driving means.

4,476,375

PROCESS FOR SELECTIVE CUTTING OF ELECTRICAL CONDUCTIVE LAYER BY IRRADIATION OF ENERGY BEAM

Tsutomu Ogawa, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 25, 1983, Ser. No. 478,721
Claims priority, application Japan, Mar. 30, 1982, 57-52100
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LN **9 Claims**



1. A process for selectively cutting an electrical conductive layer by irradiation with an energy beam, comprising the steps of:

(a) depositing a film of a heat-absorbing material on a portion of the electrical conductive layer to be cut; and

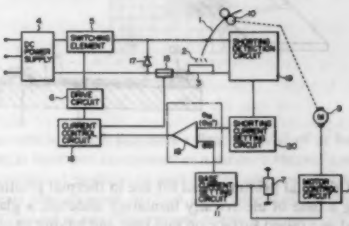
(b) irradiating the heat absorbing film with the energy beam, thereby melting and alloying the heat absorbing material with the portion of the electrical conductive layer using the energy of the energy beam that is absorbed and transferred by the heat-absorbing film.

4,476,376

DIRECT-CURRENT ARC WELDING MACHINE HAVING CURRENT CONTROL FOR PREVENTING ARC EXTINCTION FOLLOWING SHORT CIRCUITS

Takaji Mizuno; Hirohisa Segawa, both of Aichi; Shigeo Ueguri, Hyogo; Yooichiro Tabata, Hyogo, and Seigo Hiramoto, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,706
Claims priority, application Japan, Jun. 5, 1981, 56-86694
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—130.21 **4 Claims**



1. A direct current arc welding machine comprising:

a consumable electrode placed opposite to a workpiece to be welded;

a power supply for supplying a welding current between said electrode and said workpiece;

a switching element connected to the output of said power supply for controlling the welding current supplied between said consumable electrode and said workpiece during a first time interval in which a short circuit occurs between said electrode and workpiece and during subsequent second and third time intervals during which no short circuit occurs between said electrode and workpiece;

a shorting detection circuit connected between said consumable electrode and said workpiece for detecting any short circuit therebetween and for generating a first signal during a detected short circuit in said first time interval and for generating a second signal during said second time interval subsequent to said first time interval;

a base current setting circuit for generating a signal for supplying a constant base current between said consumable electrode and said workpiece, said signal generated by said base current setting circuit representing a constant base current throughout said first, second and third time intervals;

a shorting current setting circuit connected to said shorting detection circuit in which, upon receiving said first signal generates a signal for supplying an increasing current and upon receiving said second signal generates a signal for supplying a decreasing current;

a base current setting circuit for generating a signal for supplying a constant base current between said consumable electrode and said workpiece, said signal generated by said base current setting circuit representing a constant base current throughout said first, second and third time intervals;

a shorting current setting circuit connected to said shorting detection circuit in which, upon receiving said first signal generates a signal for supplying an increasing current and upon receiving said second signal generates a signal for supplying a decreasing current;

an adder connected to both said base current setting circuit and said shorting current setting circuit for forming the sum of the outputs of said base current setting circuit and said shorting current setting circuit; and

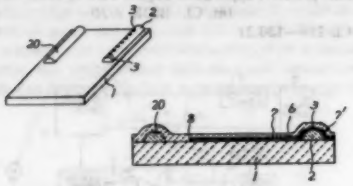
a welding current control circuit, having an input connected to the output of said adder, for controlling said switching element according to a signal supplied from said adder.

4,476,377

THERMAL PRINTING HEAD

Yutaka Tatsumi, Osaka, and Hideo Taniguchi, Kyoto, both of Japan, assignors to Rohm Company Limited, Kyoto, Japan

Division of Ser. No. 298,068, Aug. 31, 1981,. This application Dec. 2, 1983, Ser. No. 557,329
Claims priority, application Japan, Sep. 8, 1980, 55-124997
Int. Cl.[1] H05B 1/00
U.S. Cl. 219—216 3 Claims



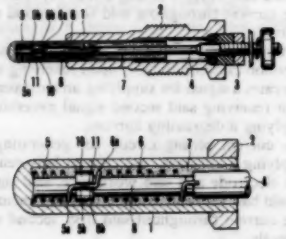
1. A thermal printing head for use in thermal printing, comprising a base of electrically insulating material, a glaze layer formed as a raised surface on said base and having an elongated main portion and an extension portion integral with and extending from one end of said main portion, said extension portion having less glaze per unit area than said main portion to relieve surface tension in said glaze layer during formation of said raise surface adjacent the end of its main body portion, and at least one thermal printing element formed on said main portion of said glaze layer, said thermal printing element including a heating layer formed on said main portion of said glaze layer and a pair of spaced apart electrically conductive layers in contact with said heating layer; and a dummy layer having an elongated raised surface portion formed on said base alongside of said main portion of said glaze layer so as to cause thermal printing paper to be held generally parallel to said base when such paper contacts said printing element.

4,476,378

GLOW PLUG FOR USE IN DIESEL ENGINE

Tozo Takizawa, and Koji Hatanaka, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,311
Claims priority, application Japan, Apr. 30, 1981, 56-65994
Int. Cl.[3] F23Q 7/22
U.S. Cl. 219—270 7 Claims



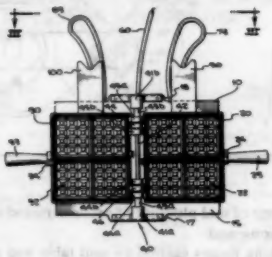
1. In a glow plug for use in a diesel engine comprising a first helical heater, a second helical heater serial connected to said first helical heater, said second helical heater being made of material having a larger positive resistance temperature coefficient than the material constituting said first helical heater, and a sheath covering said first and second heaters and being electrically insulated along said first and second heaters, characterized in that said first and second heaters are separated axially by an axial gap G larger than winding pitches P of the first and second heaters and electrically connected by a straight connector in said gap so that said gap G is 1.5 P to 12 P, said first and second heaters being wound about a guide rod made of insulating material so as to maintain the axial layout of the first and second heaters with said straight connector and gap providing a thermal impedance to conductive heat flow from said first helical heater to said second helical heater, and said second helical heater being made of low carbon steel containing less than 0.25% by weight of carbon.

4,476,379

EASILY CLEANED AND SERVICED WAFFLE IRON

Sheldon Andrizzi, Valencia, Calif., assignor to Belle Gem Waffle Co., Van Nuys, Calif.

Filed Apr. 14, 1982, Ser. No. 368,386
Int. Cl.[3] H05B 3/06
U.S. Cl. 219—524 9 Claims



1. An easily cleaned and serviced belgian style waffle iron comprising:

an open bottom base having a cavity accessible through its open bottom;

an electrical power source subassembly including a pair of electrically insulated electrical conduit plug receiving receptacles, an electrically insulated power line conduit and associated plug for connection to an electrically insulated electrical supply receptacle, electrically insulated electrical conduit means for electrically connecting said plug receiving receptacles to said power line conduit and holding means for removably mounting said receptacles, power line conduit and electrical conduit means in an unitary subassembly in said base cavity;

a pair of waffle grid providing members each having a waffle grid of heat conductive material and means for removably mounting said members to said base for pivotal movement into and out of a waffle baking position; and

detachable electrically insulated thermostat-electrical conduit means for selective engagement and disengagement with both a plug receiving receptacle of said power source subassembly and a heating element of at least one of said waffle grid providing members to selectively place said heating element in thermally controlled electrical communication with said power line conduit via said electrical power source subassembly whereby:

each of said electrical power source subassembly, waffle grid providing members and thermostat-electrical conduit means are individually and collectively removable from said base for cleaning and for ease of servicing or replacement.

4,476,380

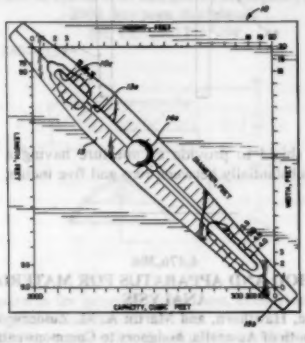
CALCULATOR

Lorne G. Sampson, 863 E. 166th St., South Holland, Ill. 60473

Filed Jan. 7, 1982, Ser. No. 337,540
Int. Cl.[3] G06C 3/00
U.S. Cl. 235—61 B 3 Claims

1. A calculator having a top, a surface chart on the latter marked with marginal and diagonal scales usable for nomo-

graphic calculations, said top containing a diagonal slot, a double-ended pointer above said chart having a longitudal centerline and a slot registering with said center line and the top slot when the pointer is rotated to match the diagonal direction of same, an axial post having a head passing through both slots and being slidable therein, the axial post having an enlargement underneath said top surface with a friction



washer, and means bearing on the enlargement from underneath to hold said washer in engagement with the under surface of said top along its slot and check the axial post from lateral movement while maintaining said post head spaced above said chart, said pointer being slidable along said top slot and rotatable about said post to balance values in said scales in keeping with a desired numerical equation.

4,476,381

PATIENT TREATMENT METHOD

Martin I. Rubin, 3218 Pauline Dr., Chevy Chase, Md. 20815

Filed Feb. 24, 1982, Ser. No. 351,863
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—375 **7 Claims**

1. A method for the transfer of patient identification to an identifying means which comprises:

providing a wrist bracelet bearing patient-identifying indicia to be worn by said patient, on which bracelet only the identifying indicia are translucent to ultra-violet;

providing an ultraviolet sensitive label;

bringing said label into physical contact with said indicia on said bracelet; and

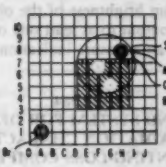
transluminating said indicia onto said label by exposure to ultra-violet while said bracelet is on said patient to reproduce said indicia on said label.

4,476,382

ENCODING SCHEME FOR ARTICLES

Roy H. White, Germantown, Md., assignor to Intex Inc., Bethesda, Md.

Division of Ser. No. 199,376, Oct. 21, 1980,. This application Apr. 21, 1983, Ser. No. 471,692
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—491 **5 Claims**



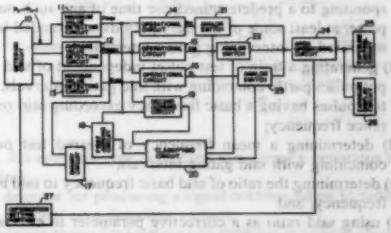
1. An article which contains a first material of at least one element, at least one compound or a mixture thereof located at a predetermined position on said article, and a second material of at least one element, at least one compound or a mixture thereof located at a predetermined position on said article, said first material and second material each having a predetermined size of area of deposition on said article, and said first material and said second material each having the property of emitting fluorescence X-rays when subjected to an X-ray primary beam, the wavelength or wavelengths and intensity or intensities thereof of said first material being a predetermined coded indication of the location of said second material, and the wavelength or wavelengths and intensity or intensities thereof of said second material being a predetermined identification or verification code.

4,476,383

PHOTOMETERING DEVICE FOR OBTAINING EXPOSURE INFORMATION

Toru Fukuhara, Isehara, and Takashi Saegusa, Sagamihara, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 123,209, Feb. 21, 1980, abandoned. This application Jun. 24, 1982, Ser. No. 391,864
Claims priority, application Japan, Feb. 28, 1979, 54-23019; Feb. 28, 1979, 54-23020; Feb. 28, 1979, 54-23021; Feb. 28, 1979, 54-24087[U]; Feb. 28, 1979, 54-24088[U]
Int. Cl.³ G01J *1/44*
U.S. Cl. 250—214 P **19 Claims**



15. A photometering device in a camera comprising:

means for photometering an object field through a plurality of divided photometering areas to generate a plurality of photoelectric outputs respectively corresponding to the brightness of said plurality of divided photometering areas, said plurality of photoelectric outputs representing a brightness distribution pattern of the object field;

means for classifying various brightness distribution patterns into a plurality of categories and determining which one

of said categories the brightness distribution pattern obtained from said photoelectric outputs belongs to; and

means for generating, in dependence upon the determination result, any one of a first output corresponding to a brightness between the maximum brightness and an average brightness of the object field, a second output corresponding to said average brightness and a third output corresponding to a brightness between said average brightness and the minimum brightness of the object field to apply said generated output to at least one of an exposure control circuit and an exposure indication circuit.

4,476,384

METHOD OF AND SYSTEM FOR DETERMINING A SPECTRUM OF RADIATION CHARACTERISTICS WITH FULL COUNTING-LOSS COMPENSATION

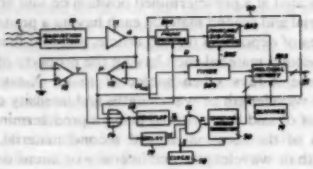
Georg P. Westphal, Schmidlerstrasse 7, A-1238, Vienna, Austria

Filed Aug. 31, 1981, Ser. No. 297,770

Claims priority, application Austria, Sep. 1, 1980, 4401/80

Int. Cl.³ H01D *18/00*; G01T *1/20*

U.S. Cl. 250—252.1 **12 Claims**



1. A method of compensating for counting losses incurred in the operation of a pulse-height analyzer receiving output pulses of variable recurrence frequency from a radiation detector and including a memory with a multiplicity of cells selectively addressable by respective digitized amplitudes of said output pulses and loadable with incremental values representing a count of occurrences of a respective pulse amplitude during a given observation period,

comprising the steps of:

(a) measuring a busy period which begins with an appearance of an output pulse of said radiation detector and ends with termination of processing of said output pulse by said analyzer;

(b) extending said busy period by an additional period corresponding to a predetermined rise time of any such output pulse, at least some of the busy periods so extended being separated by intervening gating intervals;

(c) generating a train of test pulses independent of said output pulses partly coinciding with said gating intervals, said test pulses having a basic frequency exceeding said recurrence frequency;

(d) determining a mean frequency of cleared test pulses coinciding with said gating intervals;

(e) determining the ratio of said basic frequency to said mean frequency; and

(f) using said ratio as a corrective parameter in evaluating the counts of said occurrences.

4,476,385

UTILIZING GAMMA CAMERAS FOR UPTAKE STUDIES

Alan M. Wunderlich, Pringle Rd., Miller Place, N.Y. 11764

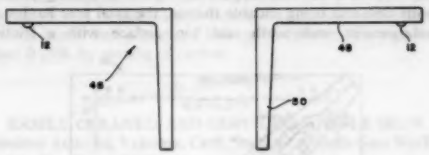
Division of Ser. No. 097,168, Nov. 26, 1979, Pat. No. 4,348,591.

This application Sep. 1, 1982, Ser. No. 413,767

Int. Cl.³ G01T *1/164*

U.S. Cl. 250—303 **7 Claims**

1. The method of performing uptake studies with a multiple detector imaging gamma camera comprising masking off the greater portion of the gamma camera's multiple detectors with



a radiation shield to provide an aperture having a greatest dimension substantially between two and five inches.

4,476,386

METHOD AND APPARATUS FOR MATERIAL ANALYSIS

Alan F. Reid, Hawthorn, and Martin A. M. Zuiderwyk, North Balwyn, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

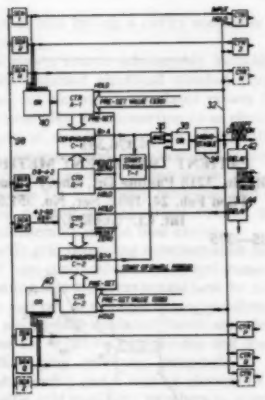
PCT No. PCT/AU81/00071, § 371 Date Jan. 26, 1982, § 102(e) Date Jan. 26, 1982, PCT Pub. No. WO81/03707, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 10, 1981, Ser. No. 380,865

Claims priority, application Australia, Jun. 11, 1980, PE3998

Int. Cl.³ G01N *23/223, 23/225*

U.S. Cl. 250—310 **42 Claims**

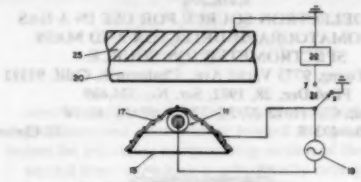


1. A method of analysis in which a beam of energy is caused to fall on a spot on the surface of a sample to be analysed and X-rays then generated at the spot are detected by one or more detectors to produce first signals representative of the energies of detected X-rays; comprising making a first count of the number of said first signals each representative of an energy within a relatively broad range of such energies and making a second count of the number of said first signals each representative of an energy in an associated relatively narrow range of energies about one particular energy wherein information relating to the relative proportion of a particular chemical element, characterized by production of X-rays of said particular energy, is obtained in the form of a normalized ratio of said second count to said first count, said normalized ratio being represented by the value of said second count when said first count reaches a predetermined value.

4,476,387
CORONA CHARGING APPARATUS

Harold W. Cobb, Acton, and Richard A. Fotland, Holliston, both of Mass., assignors to Delphax Systems, Mississauga, Canada

Continuation of Ser. No. 237,559, Feb. 24, 1981, Pat. No. 4,379,969. This application Apr. 11, 1983, Ser. No. 483,805
The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.
Int. Cl.³ H01T 19/04
U.S. Cl. 250—324 22 Claims

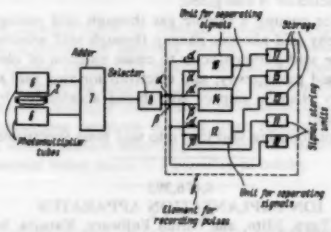


1. Apparatus for generating free ions, comprising:
an elongate conductor;
an insulating support for the elongate conductor;
a dielectric member positioned with the elongate conductor between the insulating support and the dielectric member, said dielectric member having an outer surface remote from the elongate conductor;
a conductive grid contacting said outer surface;
varying potential means applied between the elongate conductor and the conductive grid in order to create a glow discharge,
thereby to generate said free ions.

4,476,388
RADIOMETRIC METHOD FOR DETERMINING CONCENTRATION OF NATURALLY OCCURRING ISOTOPES AND DEVICE THEREFOR

Solomon L. Yakubovich; Marat E. Kotsen; Vladislav V. Golubnichy, all of Moscow; Voldemar E. Gerling, and Jury N. Stepanov, both of Leningrad, all of U.S.S.R., assignors to Vsesojuzny Nauchnoissledovatelsky Institut Miniralnogo Syrja, Moscow, U.S.S.R.

Filed Jan. 22, 1982, Ser. No. 341,750
Int. Cl.³ G01T 1/20
U.S. Cl. 250—361 R 2 Claims



1. A radiometric method for determining concentration of naturally occurring isotopes of radium in a sample of an analyzed substance comprising the following successive steps:
placing the sample of the analyzed substance between two scintillators separated by a screen and in contact therewith, and simultaneously sealing said sample;
recording by the use of light flashes occurring in said scintillator ionizing α- and β-radiation and β-α and α-α cascade pairs of delayed coincidences of RaC, ThC and AcA radionuclides;
measuring twice flows of α- and β-particles and β-α and α-α delayed coincidences of cascade pairs of RaC, ThC and AcA radionuclides after a preset time interval;
determining concentration of naturally occurring isotopes of radium in said sample of said analyzed substance using the obtained results by the formula:

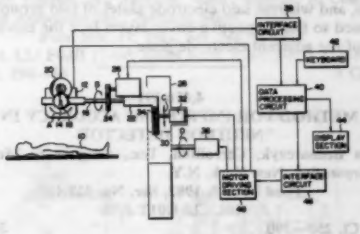
$$q^{A}_{Ra} = \frac{1}{\epsilon_A} \cdot \left[\Phi_1 + \frac{\Phi_2 - \Phi_1}{1 - e^{-\lambda_A T}} \right]$$

where
q^{A}_{Ra} = concentration of a measured isotope of radium (A = 226 or 224 or 223), % of a mass fraction;
ϵ_A = isotope-of-radium concentration unit sensitivity of measuring equipment (A = 226 or 224 or 223), pulses per second referred to 1% of a mass fraction of a respective isotope;
Φ_1 = number of pulses corresponding to β-α and α-α cascade pairs for a respective radionuclide, which is measured immediately after said sample is sealed;
Φ_2 = number of pulses corresponding to β-α and α-α cascade pairs for a respective radionuclide, which is measured after a preset time interval following the sealing of said sample;
λ_A = emanation decay constant of a respective radionuclide for:
^{226}Ra the constant ^{222}Rn = 2.097×10^{-6} s^{-1};
^{224}Ra the constant ThB = 1.809×10^{-5} s^{-1};
^{223}Ra the constant ^{219}An = 0.1768 s^{-1};
T = said preset time interval equal to emanation build-up time.

4,476,389
EMISSION TYPE COMPUTED TOMOGRAPHY APPARATUS

Akihide Ueyama; Nobuo Kumano, both of Tochigi, and Hidetomo Takase, Yaita, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 11, 1981, Ser. No. 301,437
Claims priority, application Japan, Sep. 17, 1980, 55-129916
Int. Cl.³ G01T 1/20
U.S. Cl. 250—363 S 2 Claims



1. An emission type computed tomography apparatus comprising:
a detector for producing a signal corresponding to radiation incident on a detecting surface;
rotating means for rotating said detector in a circle about the body axis of an organism;
means for interconnecting said detector and said rotating means so that the detecting surface may have any desired angle with respect to a tangential line of the motion of said detector, said interconnecting means including a member for moving said detector toward and away from said organism;
processing means for determining first a fixed diameter of the circular motion of said detector orthogonal to the body axis in accordance with the body width of the organism and second, an angle of the detecting surface with

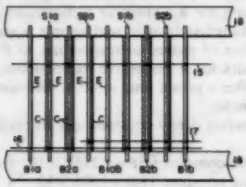
respect to said tangential line in accordance with the determined diameter and the size of the detecting surface of said detector such that a field of the detector includes the body axis and a center of the field does not pass through the body axis, and for processing an output signal from said detector over the motion of said detector caused by said rotating means.

4,476,390

RADIATION DETECTOR HAVING RADIATION SOURCE POSITION DETECTING MEANS

Masatoshi Hanawa, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 29, 1982, Ser. No. 363,384
Claims priority, application Japan, Mar. 31, 1981, 56-48022
Int. Cl.³ G01T *1/18*; G01N *21/00*
U.S. Cl. 250—385 **20 Claims**



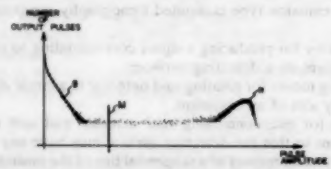
1. A multichannel radiation detector comprising a body, radiation source position detecting means disposed at each end of the body for detecting the position of a radiation source, each of said radiation source position detecting means having at least one positional deviation sensing cell including a grouping of three to five electrode plates, said grouping having alternately disposed bias and signal electrode plates, wherein the central electrode plate of said grouping is a bias electrode plate having a cover layer on both surfaces while predetermined ones of the remaining electrode plates of said grouping have a cover layer on only one surface thereof, said cover layer of said central electrode plate and said predetermined ones of the remaining electrode plates being a material having a smaller secondary electron emissive power for the incident radiation than that of the material of said respective electrode plates, and wherein said electrode plates of said groupings are disposed so that respective cover layers face the exposed surface of the adjacent electrode plate.

4,476,391

METHOD FOR IMPROVING ACCURACY IN A NEUTRON DETECTOR

Adam Bednarczyk, Carrollton, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,435
Int. Cl.³ G01T *3/00*
U.S. Cl. 250—390 **3 Claims**



1. A method for improving the accuracy of a neutron detector comprising the steps of:

plotting a distribution by amplitude of gamma-ray interaction with said neutron detector by determining a theoretical amplitude of said gamma-ray interaction and providing a statistical distribution display of said theoretical amplitudes;

plotting a distribution by amplitude of neutron output of said neutron detector;

setting a threshold amplitude level for said neutron output distribution; and

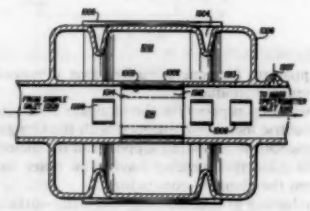
attributing all distribution points below said threshold amplitude level to said gamma-ray interaction.

4,476,392

PHOTOELECTRON SOURCE FOR USE IN A GAS CHROMATOGRAPH DETECTOR AND MASS SPECTROMETER ION SOURCE

Robert A. Young, 9773 Variel Ave., Chatsworth, Calif. 91311

Filed Dec. 28, 1981, Ser. No. 334,489
Int. Cl.³ H01J *27/20, 27/24, 49/10, 49/14*
U.S. Cl. 250—423 R **32 Claims**



1. An ionization source for a mass spectrometer comprising

a substantially cylindrical lamp;

an RF oscillator coil adjacent the outer wall of said lamp;

a passageway through said lamp;

a substantially cylindrical window in the wall of said passageway, said window being transparent to VUV ionizing radiation;

a substantially circular electron acceleration grid in said passageway having a length substantially the same as said window;

a substantially cylindrical high work function photocathode between said window and said grid, said acceleration grid being at a positive potential relative to said photocathode;

a gas filling between the wall of said lamp and said wall of said passageway for generating optical photons when said RF oscillator is energized;

means for passing a sample gas through said passageway, whereby said photons passing through said window illuminate said photocathode to cause ejection of electrons into said passageway, said electrons ionizing said sample gas by electron impact after being accelerated by said grid; and

means for focusing said ions into said mass spectrometer.

4,476,393

ION IMPLANTATION APPARATUS

Shunroku Taya, Mito, and Mituo Fujiwara, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,873
Claims priority, application Japan, May 7, 1981, 56-68779
Int. Cl.³ H01J *37/00*
U.S. Cl. 250—492.2 **13 Claims**

1. An ion implantation apparatus comprising:

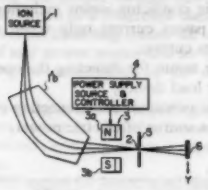
means for generating ions;

dispersing and focusing means for dispersing the ions in accordance with a difference in their mass number on a predetermined plane and focusing the dispersed ions of a predetermined mass number on a predetermined position;

means disposed between said dispersing and focusing means and said predetermined position, for electromagnetically

and repeatedly scanning the dispersed ions of the predetermined mass number in a first direction which is substantially orthogonal to said predetermined plane;

a slit member disposed at said predetermined position, for



selectively directing the dispersed and scanned ions of said predetermined mass number toward a target; and

means for providing reciprocating motion of the target in a second direction which is substantially orthogonal to the first direction.

4,476,394

INSERTION CANISTER FOR RADIOACTIVE MATERIAL TRANSPORTATION AND/OR STORAGE CONTAINERS

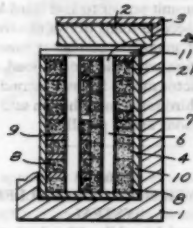
Erhard Müller, Gründau; Richard Christ, Bruchköbel, and Hartmut Kroll, Hanau, all of Fed. Rep. of Germany, assignors to Transnuklear GmbH, Hanau, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,441

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3013310

Int. Cl.³ G21F *5/00*

U.S. Cl. 250—507.1 **12 Claims**



1. A transportation or storage container having located therein a removable insertion canister, said canister having shafts therein adapted to receive radioactive material, especially for receiving spent fuel elements from nuclear reactors, said canister having a matrix made predominantly of graphite for modulating neutrons emitted from radioactive material mixed with a neutron absorbing material, said neutron absorbing material being made of a plurality of bricks.

4,476,395

TANDEM-GENERATOR DESIGN FOR AIRCRAFT

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Oct. 19, 1981, Ser. No. 312,783

Int. Cl.³ H02K *7/116*

U.S. Cl. 290—6 **2 Claims**

1. An aircraft power generation system comprising in combination:

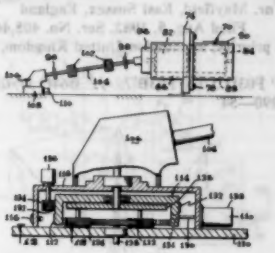
an aircraft engine, said engine having at least one drive shaft;

a tandem generator driven by said at least one drive shaft, said tandem generator comprising two permanent magnet AC synchronous generators arranged in a single housing;

a mechanical drive mechanism interactively interposed between said at least one drive shaft and said tandem generator; and

disconnect means associated with said mechanical drive mechanism for selectively isolating said engine from said tandem generator when said engine is running, said disconnect means comprising:

means for speed adjustment between said engine and said tandem generator, said speed adjustment means comprising a planetary differential having interactive sun gear, planet gear, planet carrier and ring gear elements within a planetary differential housing for carrying out said speed adjustment;



disconnect means including an electric solenoid mounted to said housing and adapted to actuate pin means for selectively locking or releasing said ring gear element by moving said pin into "lock" and "release" positions;

electromechanical switch means for actuating said electric solenoid and further including logic means for activating said switch means responsive to abnormal torque of said mechanical drive system, mechanical overheating of said power generation system and electrothermal overheating of said power generation system; and

means for monitoring the position of said ring gear.

4,476,396

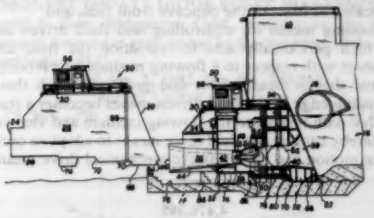
LOW-HEAD HYDROELECTRIC GENERATION SYSTEM

James D. Calvert, Jr., Jackson, Mich., assignor to Commonwealth Associates Inc., Jackson, Mich.

Filed Sep. 27, 1982, Ser. No. 424,013

Int. Cl.³ F03B *13/08;* E02B *9/08, 9/04;* F01D *25/28*

U.S. Cl. 290—53 **8 Claims**



1. A method of hydroelectric generation in rivers susceptible to flood conditions wherein spillway structure having an opening, a gate and anchor means is located within the river utilizing a barge having controlled ballast tanks, anchor means, and supporting a hydroelectric turbine comprising the steps of:

(a) during nonflooding river conditions emptying the ballast tanks and floating the barge into a spillway into alignment with the opening thereof,

(b) flooding the ballast tanks to submerge the barge within the spillway opening and engage the spillway structure

and barge anchor means to anchor the barge within the opening,

(c) raising the spillway gate to permit water to flow into the turbine and generate electricity,

(d) removing water from the ballast tanks in the event of flood conditions to refloat the barge and disengaging the spillway structure and barge anchor means, and

(e) removing the refloated barge from the spillway to permit unrestricted flow through the spillway.

4,476,397

ENERGY CONVERSION APPARATUS

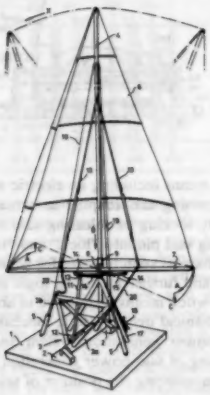
David A. Lawson, Woodreed Farmhouse, Stonehurst La., Five Ashes, nr. Mayfield, East Sussex, England

Filed Aug. 5, 1982, Ser. No. 405,463

Claims priority, application United Kingdom, Aug. 12, 1981, 8124643

Int. Cl.[3] **F03D** *5/06*; **F03B** *13/12*; **B64C** *31/06*; **B63G** *8/42*

U.S. Cl. 290—54 **27 Claims**



1. Apparatus for converting fluid energy into mechanical energy, said apparatus comprising:

fluid driven means including at least a concave front face, a convex rear face, a leading edge and a trailing edge,

mechanical drive means,

said fluid driven means being operatively connected to said mechanical drive means,

means for pivoting said fluid driven means about a pivot axis located in front of the concave front face, and

positioning means for controlling said fluid driven means which periodically acts to reposition the fluid driven means with respect to a flowing medium by pivoting the fluid driven means about said pivot axis such that the leading edge of the fluid driven means becomes a trailing edge with respect to the flowing medium and vice versa, thereby causing the fluid drive means to adopt an oscillating motion and powering the mechanical drive means.

4,476,398

HOME DEMAND CONTROLLER

William R. Hallam, R.F.D. #1, Monmouth, Ill. 61462

Filed Mar. 8, 1983, Ser. No. 473,432

Int. Cl.[3] **H02J** *3/00*

U.S. Cl. 307—39 **7 Claims**

4. Apparatus for controlling demand for electricity by a plurality of electrical load devices comprising

detector means for detecting the operation of a first said electrical load device and for generating a first voltage indicating said operation,

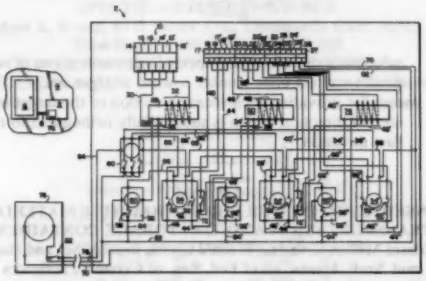
first relay means connected to a source of electrical power for transmitting said power to a first magnetic contactor in the absence of said first voltage, and for not transmitting said power when said first voltage is present,

first magnetic contactor means adapted to connect a second of said load devices to a source of electrical power in response to an electrical signal from said relay means,

said first magnetic contactor means including an auxiliary switch which passes current only when said magnetic contactor passes current,

a second detector means for detecting the operation of said second electric load device,

a second magnetic contactor for connecting a third electric load device to a source of electric power,



a second relay means connected to a source of electric power and to said second detector for transmitting electric power to said second magnetic contactor when second electric load is not operating,

said second relay means being in series with said auxiliary switch whereby said second magnetic contactor is not activated to transmit power to said third load when either of said first or second loads draws electric power, and

wherein said first magnetic contactor means forms a first series combination with said second load, and said second magnetic contactor means forms a second series combination with said third load, and wherein said first and second series combinations are in parallel.

4,476,399

STABILIZED POWER SOURCE PARALLEL OPERATION SYSTEM

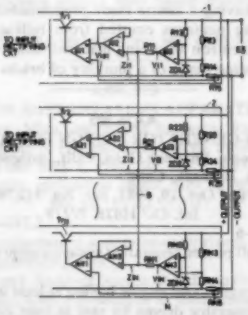
Masahiro Yoshida, and Masahiko Oka, both of Tokyo, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Jun. 7, 1983, Ser. No. 502,056

Claims priority, application Japan, Jun. 10, 1982, 57-98478

Int. Cl.[3] **H02J** *1/10, 1/04, 3/08*

U.S. Cl. 307—44 **3 Claims**



1. A stabilized power source parallel operation system comprising a plurality of stabilized power sources connected in

parallel to one another, each of said power sources producing an output voltage and an output current, each of said sources comprising:

an error voltage detecting means for comparing a reference voltage and said output voltage and outputting an error voltage indicative of a difference therebetween;

an output current detecting means for detecting an output current of said power source and for outputting an detection voltage corresponding to the output current thus detected;

a current adjusting means for adjusting an output current of said power source so that the detection voltage of said output current detecting means is equal to the current set value; and

a common bus means for interconnecting the outputs of said error voltage detecting means of each of said power sources, said error voltages thereof being combined in said bus to produce an averaged current set value for setting each of said current set values of said power sources.

4,476,400

TERMINAL APPARATUS AND A BATCH INSERTING TYPE TEST PLUG FOR A DRAWER TYPE RELAY

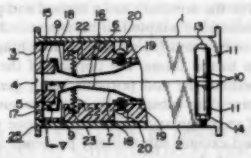
Toshitaka Jo; Kuniyoshi Hara; Koichi Mizuta, and Hiroshi Yamamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,388

Claims priority, application Japan, Jul. 30, 1981, 56-119812; Oct. 1, 1981, 56-156753

Int. Cl.³ H02J *13/00*; H01R *13/52*

U.S. Cl. 307—147 **15 Claims**



1. A terminal apparatus for a drawer type relay, comprising:

upper and lower terminal boards having at least one plug inserting port and one inspection window on a front side thereof;

terminal pieces arranged on said upper and lower terminal boards, said terminal pieces being connected to an input side having a power source and a relay element side of said relay;

a plurality of contact pieces having one end fixed to said terminal pieces, an opposite free end of said contact pieces having a contact thereon, said contact pieces being pushed open as an electrode plate of a plug is inserted and removed from said plug inserting port;

stopping boards installed on said upper and lower terminal boards for contacting said free ends of said contact pieces to limit bending of said free ends;

an insulation rod having a thinner center shaft portion and having one end fitted in a hole on said stopping board of said lower terminal board and another end supported and fixed to a lower side cover of said terminal apparatus;

a compression spring;

a short bar loosely inserted about said thinner center shaft portion of said insulation rod and supported at an upper surface by said compression spring, said short bar normally being supported at a lower surface by one of said contacts on said free end of one of said contact pieces;

said short bar being connected to or separated from said one of said contacts on said free end of said one of said contact pieces with a predetermined time delay as said electrode plate of said plug in inserted and removed from said plug inserting port so that a secondary side of a current transformer is automatically prevented from opening as said power source in said input side of said relay is connected to or separated from said relay element side.

4,476,401

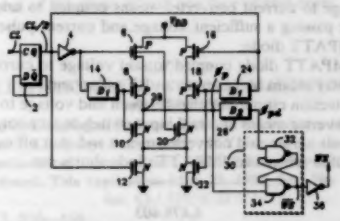
WRITE STROBE GENERATOR FOR CLOCK SYNCHRONIZED MEMORY

Liang-Tsai Lin, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1983, Ser. No. 462,574

Int. Cl.³ H03K *3/86, 5/06*

U.S. Cl. 307—269 **10 Claims**



1. A circuit for generating a plurality of output pulses, each in response to one of a plurality of input pulses and occurring at a predetermined period of time thereafter, comprising:

first means for receiving said plurality of input pulses and generating therefrom a symmetrical pulse train having a reduced frequency;

second means coupled to said first means for generating a trigger pulse of a first predetermined duration at every transition of said symmetrical pulse train, said second means including first delay means having a delay time corresponding to said first predetermined duration;

third means coupled to said second means for delaying each of said trigger pulses; and

switching means coupled to said second and third means for receiving therefrom said trigger pulses and the delayed trigger pulses and for generating therefrom said plurality of output pulses.

4,476,402

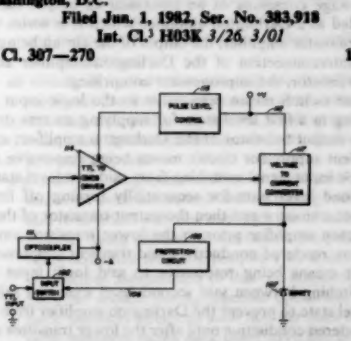
VMOS-FET IMPATT DIODE PULSE BIAS CIRCUIT

Wronald S. Best, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 1, 1982, Ser. No. 383,918

Int. Cl.³ H03K *3/26, 3/01*

U.S. Cl. 307—270 **14 Claims**



1. A bias circuit for delivering high voltage and current

pulses of specified duty factors and pulse widths to an IMPATT diode to generate RF pulses, comprising:

an input switch serving primarily as an inport buffer and to achieve a proper polarity of an input signal;

voltage translation means coupled to said input switch for permitting voltage level translation of said input signal to a new ground reference without distorting said input signal;

a driver circuit coupled to said voltage translation means to amplify said input signal;

a pulse level control circuit coupled to said driver circuit to regulate the amount of bias voltage applied to said driver circuit and thereby regulate the magnitude of amplification of said driver circuit;

voltage to current converter means coupled to said driver for passing a sufficient voltage and current pulse to said IMPATT diode;

an IMPATT diode coupled to said voltage to current converter means to generate an RF pulse; and

a protection circuit coupled between said voltage to current converter means and said input switch to monitor voltage levels across said converter means and shut off said input switch when said IMPATT diode shorts out.

4,476,403

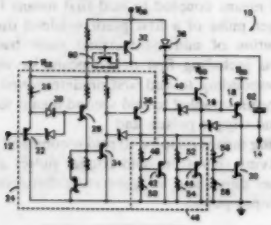
LOW LEVEL LOGIC TO HIGH LEVEL LOGIC TRANSLATOR HAVING IMPROVED HIGH STATE DRIVE

Gordon H. Allen, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 4, 1982, Ser. No. 405,013

Int. Cl.³ H03K *19/092, 17/16, 17/60*

U.S. Cl. 307—475 **6 Claims**



1. Level shift circuit having improved high current drive for producing a high level logic output signal in response to receiving a low level logic input signal including a push-pull output stage consisting of an input and an output transistor connected as a Darlington amplifier which is in series with a lower transistor amplifier, the output of the circuit being taken at the interconnection of the Darlington amplifier and the lower transistor, the improvement comprising:

current switch means responsive to the logic input signal being in a first level state for supplying current drive to the output transistor of the Darlington amplifier; and

transient suppressor circuit means being responsive to the logic input signal switching from said first level state to a second level state for sequentially turning off first the input transistor and then the output transistor of the Darlington amplifier prior to the lower transistor amplifier being rendered conductive, said transient suppressor circuit means being responsive to said logic input signal switching between said second level state and said first level state to prevent the Darlington amplifier from being rendered conductive until after the lower transistor amplifier is turned off such that power supply current transients are inhibited as the logic input signal alternately switches between level states.

4,476,404

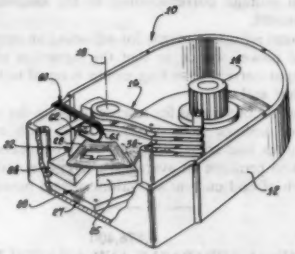
FLEXIBLE CONDUCTOR FOR SUPPLYING CURRENT TO A PIVOTALLY MOVABLE ELECTRICAL ELEMENT

Perry A. Bygdnes, Redwood City, Calif., assignor to Tandon Corporation, Chatsworth, Calif.

Filed Sep. 23, 1983, Ser. No. 535,236

Int. Cl.³ H02K *33/00*

U.S. Cl. 310—27 **3 Claims**



1. A sector motor for use in connection with a recording head positioning mechanism, or the like, including:

a frame;

an armature mounted on the frame for pivotal, oscillatory movement relative thereto about an axis of rotation; and

a flexible conductor strip for coupling the armature to a source of electrical control signals, the conductor strip having a first end portion including terminations connected to the armature and a second end portion including (i) terminations adapted to be connected to the electrical signal source and (ii) means for attaching the second end portion to the frame, the portion of the conductor strip intermediate the end portions being generally U-shaped and coinciding substantially with the surface of the frustum of an imaginary right circular cone whose axis intersects and extends substantially perpendicular to the axis of rotation of the armature and whose vertex lies substantially on that axis.

4,476,405

BEARING COOLING MECHANISM FOR VEHICULAR A.C. GENERATOR

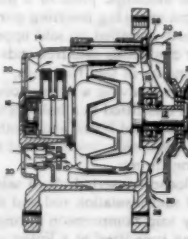
Kelichi Komurasaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,048

Claims priority, application Japan, Dec. 26, 1981, 56-194339[U]

Int. Cl.³ H02K *9/04*

U.S. Cl. 310—60 R **1 Claim**



1. A bearing cooling mechanism for a vehicular AC generator comprising a frame, a rotary shaft of a rotor rotatably mounted to said frame through a pair of opposite bearings, a pulley and a cooling fan fixedly secured in overlapped relation-

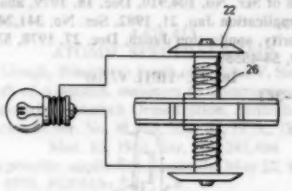
ship on said rotary shaft at one end thereof protruding from an adjacent one of said bearings, and a plurality of ventilating holes extending through portions of said pulley and cooling fan adjacent to said rotary shaft to be located at predetermined equal angular intervals about the longitudinal axis of said rotary shaft.

4,476,406

GENERATOR

Fumito Komatsu, 1632-12, Nomura, Ooaza Hirooka, Shioziri-shi, Nagano-ken, Japan

Filed Mar. 25, 1983, Ser. No. 478,952
Int. Cl.³ H02K *21/24*
U.S. Cl. 310—67 A 4 Claims



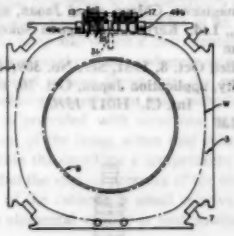
1. A generator comprising first and second armatures one of which is a stator and the other of which is a rotor, said first armature comprising an emf-providing coil wound on one of the two straight components of a cross-shaped 4-pole core, with a reversal in winding direction at the center of the core, and the second armature comprising a permanent-magnet cylinder surrounding said coil, the other of said straight components of said core having substantially no coils wound thereon.

4,476,407

APPARATUS AND SYSTEM FOR TERMINATING THE WINDING WIRES OF A DYNAMOELECTRIC MACHINE

Eugene F. Hildebrandt, and Thomas V. Ottersbach, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 29, 1982, Ser. No. 427,646
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—71 15 Claims



1. In a dynamoelectric machine having a stator, the latter including a core comprised of a stack of plate-like laminations of suitable ferromagnetic material, said core having a central bore therethrough and a plurality of slots extending generally radially outwardly of the core, at least one coil made up of a plurality of turns of magnet wires inserted in said slots thus constituting the windings of the motor, said winding having a first and a second end of said magnet wire, a terminal block of electrically insulative material affixed to said core, said terminal block having at least one receptacle therein and a slot on opposite sides of said receptacle for receiving said magnet wire with the latter extending across said receptacle, and a lead wire terminal insertable into said receptacle so as to make electrical contact with said magnet wire extending across said receptacle, wherein the improvement comprises: said core having at least one aperture in one face thereof extending generally parallel to the axial center line of said bore within said core, said terminal block bearing against said one outer face of said core and having at least one pin extending therefrom for reception in said at least one aperture thereby to restrain said terminal block against translational movement relative to said one face of said core, said terminal block further having at least one finger extending from said terminal block in a direction generally radially inwardly of said core and bearing against said one face of said core thereby to restrain said terminal block against tilting out of the plane of said one face of said core.

4,476,408

HIGH EFFICIENCY, LOW COST PERMANENT MAGNET AC MACHINE

Vernon B. Honsinger, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 041,864, May 23, 1979, abandoned. This application May 25, 1982, Ser. No. 381,819
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156 2 Claims

1. A permanent magnet synchronous machine for operating asynchronously during intervals of initial machine acceleration at speeds less than synchronous machine speed and for operating as a synchronous machine at synchronous machine speeds comprising:

a stator having a plurality of windings excited by alternating current to provide a rotating magnetic field within the stator; and

a permanent magnet multipole rotor mounted within said stator for rotation therein, said rotor including:

a rotor core configured of a plurality of unitary disc laminations, each of said laminations having a periphery, said rotor core having a shaft extending axially through said laminations;

an electrically conductive winding secured through said rotor core laminations adjacent to the laminate periphery, said electrically conductive winding securing said rotor core laminations in face-to-face relationship with one another; and

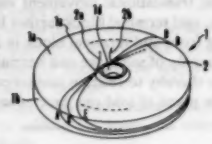
a plurality of magnetic members secured axially through said rotor core laminations and extending radially about said rotor shaft with one end segment of each magnetic member being adjacent to the lamination periphery and being separated from the periphery by a section of said laminations dimensioned so that the magnetic flux saturates the section during machine operation, said magnetic members polarized such that the sides of the magnetic members facing each other have like polarity said machine having as many poles as there are radially extending magnetic members.

4,476,409

COILS OF CORELESS MOTOR AND METHOD OF MANUFACTURING THE SAME

Tadashi Fukami, Kanagawa, Japan, assignor to Oken Seiko Co., Ltd., Inagi, Japan

Filed Oct. 28, 1982, Ser. No. 437,355
Claims priority, application Japan, Oct. 30, 1981, 56-172965
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—198 3 Claims



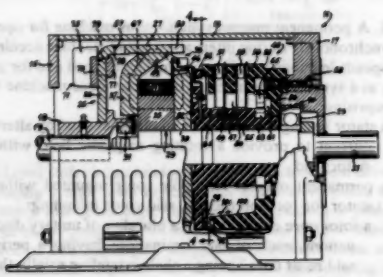
1. A coil for use in a coreless motor, said coil comprising a plurality of successive angularly offset wire windings shaped into a flat circular disc portion with an integral cylindrical portion at the periphery thereof, each of said windings extending away from a central region of said disc portion over a first point on said periphery and onto said cylindrical portion, then approximately 180° around said cylindrical portion along a path substantially parallel to the plane of said disc portion, then over a second point on said periphery and back onto said disc portion, and then from said second point back towards said central region.

4,476,410

EDDY CURRENT COUPLING WITH SLIP RING CLEANING MECHANISM

John H. Wolcott, 7912 160th Ave., Bristol, Wis. 53104

Filed Aug. 12, 1983, Ser. No. 522,447
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—228 20 Claims



1. An eddy current coupling comprising a housing, a rotor member disposed in said housing and rotatable about an axis of rotation, inductor drum means disposed in said housing and rotatable about an axis of rotation relative to said rotor member, coil means located in said housing for producing an electro-magnetic field for electromagnetically coupling said rotor member and said inductor drum means, and a slip ring assembly for supplying energy to said coil means, said slip ring assembly including a first support member connected to said rotor member for rotation therewith, slip ring means for energizing said coil means supported by said first support member for rotation therewith, a second support member supported by said housing, brush means supported by said second support member in a position in said housing in which said brush means conductively engage with said slip ring means, said first and second support members defining a sealed chamber in which said slip ring means and brush means are located, passageway means from said sealed chamber for directing wear debris generated by the contact between said brush means and slip ring means from said sealed chamber and impeller means for impelling the debris through said passageway means and from said chamber.

4,476,411

RECTANGULAR THICKNESS SHEAR QUARTZ CRYSTAL OSCILLATOR

Masanobu Okazaki, Sayama; Satoshi Akutsu, Saitama, and Susumu Ebihara, Sayama, all of Japan, assignors to Nihon Dempa Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 104,910, Dec. 18, 1979, abandoned.
This application Jan. 21, 1982, Ser. No. 341,245
Claims priority, application Japan, Dec. 27, 1978, 53-163250; Apr. 14, 1979, 54-45559
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—361 3 Claims

1. A thickness shear quartz crystal oscillator comprising a quartz crystal plate having two major surfaces extending in the direction of the X axis of the crystal plate, said major surfaces being 5 mm to 10 mm long and being parallel to an X-Z′ plane defined by the X axis and an imaginary Z′ axis inclined to the Z axis of the crystal plate at 35°08′ to 35°16′, and the length/-width ratio of said major surfaces being from 5:1.4 to 10:1.4, one of said major surfaces being displaced in the direction of the Z′ axis to thereby cause the side faces of the crystal place to incline at an angle of 4° to 6°.

4,476,412

SPARK PLUG

Minoru Nishida; Tadashi Hattori, both of Okazaki, and Takanori Yanagisawa, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Oct. 8, 1981, Ser. No. 309,847
Claims priority, application Japan, Oct. 10, 1980, 55-142270
Int. Cl.³ H01T *13/02*
U.S. Cl. 313—130 13 Claims

1. A spark plug including:
a plug shell;
a center electrode substantially co-axial with said plug shell;

at least one ground electrode connected to said plug shell and cooperating with said center electrode to define a gap;

a first insulating layer surrounding one of said center and ground electrodes made of a heat-resistant and a high voltage-resistant material; and

a second insulating layer made of a material having a high dielectric constant and interposed between said first insulating layer and only the portion of said one electrode which is directed substantially toward the other electrode wherein said second insulating layer is completely surrounded by said first insulating layer and said center electrode.

4,476,413

ATOMIC SPECTRAL LAMP

David S. Gough, Blackburn South, and John V. Sullivan, Carnegie, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

Continuation of Ser. No. 41,463, May 22, 1979,. This application Mar. 13, 1981, Ser. No. 243,404

Claims priority, application Australia, May 22, 1978, PD4468; Aug. 17, 1978, PD5545

Int. Cl.³ H01J *19/68*

U.S. Cl. 313—550 **12 Claims**

1. An atomic spectral lamp of the type comprising a predominantly glass envelope in which are disposed spaced electrodes including a single anode and a single electron emitter filament cathode for producing an electrical discharge on application of a suitable potential difference to the electrodes and a substance that on being heated will yield a vapour of an element which characterizes the lamp and which is detrimental to the electron emitting capacity of said cathode, wherein said substance is so positioned that said vapour flows into the path of said discharge at a position spaced from said cathode, and wherein said envelope is provided with structural means so that in normal operation of the lamp, when said substance is heated there exists within the envelope a temperature gradient effective to ensure that the vapour pressure of the elemental vapour in the vicinity of the cathode is small relative to the vapour pressure of the elemental vapour at said position.

4,476,414

CAPACITOR BALLAST

Bruce D. Jimerson, 27375 Coolwater Ranch Rd., Valley Center, Calif. 92082

Filed Nov. 29, 1982, Ser. No. 445,444

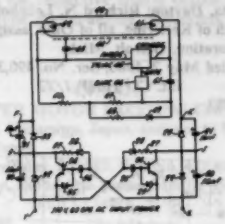
Int. Cl.³ H05B *37/00*

U.S. Cl. 315—240 **15 Claims**

1. An apparatus for operating an ionized gas lamp of the type having heated filament electrodes from a standard 50 or 60 cps alternating current power source comprising:

a ballast capacitor;

means for connecting said ballast capacitor in series with the lamp and power source;



means for reigniting the ionized gas lamp during each positive and negative half cycle of the alternating current power source at a time prior to zero crossing.

4,476,415

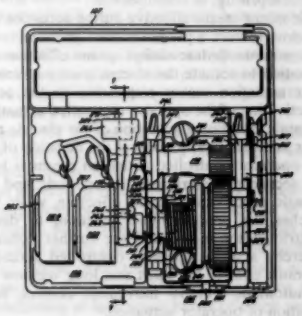
FEEDBACK TRANSDUCER

Thomas O. Kautz, Waukesha, and Gerald A. Duenkel, Milwaukee, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Division of Ser. No. 410,085, Aug. 20, 1982,. This application Dec. 6, 1982, Ser. No. 447,168

Int. Cl.³ H02K *41/00*

U.S. Cl. 318—135 **10 Claims**



1. A transducer for generating a feedback signal representative of the position of a linearly-movable member including:

a signal generating mechanism for providing an electrical feedback signal representative of the position of a linearly-movable member, said signal generating mechanism including a first shaft portion having a first longitudinal centerline;

a drive mechanism including a shaft member coupled in driving engagement to said first shaft portion, said drive mechanism being adapted to be cable connected to one of a plurality of linearly-movable members having maximum travel spans different one from the other, said shaft member including a shaft longitudinal centerline concentric with said first centerline, said centerlines thereby defining a first axis;

an alignment mechanism coupled intermediate said drive mechanism and said signal generating mechanism and adapted to permit limited movement of said first axis with respect to a reference axis, said alignment mechanism thereby isolating said signal generating mechanism from misalignment reaction forces.

4,476,416

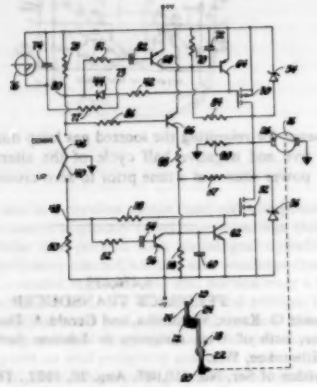
POWER WINDOW CONTROL FOR MOTOR VEHICLE WINDOW

Joseph P. Licata, Dayton; Richard N. Lehnhoff, and Frank J. Terkoski, both of Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 2, 1983, Ser. No. 490,314

Int. Cl.³ H02P *1/22*

U.S. Cl. 318—283 **4 Claims**



1. Power window control apparatus for a motor vehicle window comprising, in combination:

electric motor means effective during actuation to drive said window toward a predetermined position;

operator controlled actuation means effective only during actuation to actuate the electric motor means;

further actuation means responsive to the actuation and deactivation of the operator controlled actuation means to maintain continuing actuation of the electric motor means after said deactivation only if the duration of actuation of the operator controlled actuation means is between first and second predetermined time periods; and

automatic deactivation means effective, when the window reaches the predetermined position, to deactivate the electric motor means and the further actuation means, whereby a single operator controlled actuator provides operator control for short and long window movements or automatic window movement control, based on the duration of operator actuation.

4,476,417

CONTROL ARRANGEMENT FOR A STATIC CONVERTER

Horst Zimmermann, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

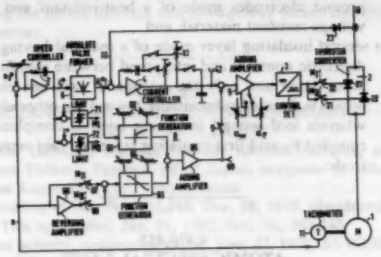
Filed Jul. 19, 1983, Ser. No. 515,181

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230206

Int. Cl.³ G05B *5/00*

U.S. Cl. 318—329 **3 Claims**

1. In a static converter for controlling a DC motor including at least one thyristor valve group coupled to the motor, a control set coupled to the thyristor valve group for controlling the thyristor valve group, a current controller coupled to the control set for generating a first signal, said first signal being supplied to said control set, and a speed controller adapted to receive a signal representative of the speed of the motor for generating a second signal, said second signal being supplied to the current controller, the improvement comprising pilot signal means adapted to receive a signal representative of the speed of the motor, the pilot signal means further being coupled to receive the second signal from the speed controller and being coupled to the control set to provide a pilot signal thereto responsive to the motor speed representative signal and



the second signal from the speed controller, the control set controlling the thyristor valve group in response to said first signal from the current controller and said pilot signal.

4,476,418

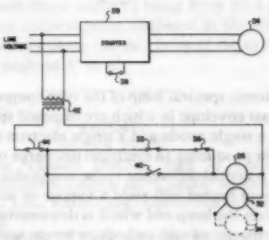
WELL PUMP CONTROL SYSTEM

John W. Werner, 4710 59th St., Lubbock, Tex. 79414

Filed Jul. 14, 1982, Ser. No. 398,085

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—332 **12 Claims**



9. A well pump comprising:

a stationary member;

a reciprocal member cyclically operable between a first position and a second position;

a pivotally mounted rocking beam with a first end attaching to said reciprocating member;

a counterbalanced crank attached to a second end of said rocking beam;

an electric motor operably connected to said counterbalanced crank;

a first means for removing power from said electric motor at a first selected intermediate point while said reciprocating member is moving from said first position to said second position; and

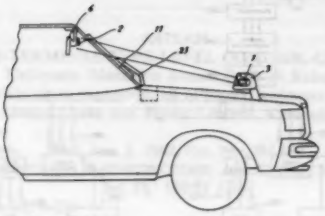
second means for applying power to said electric motor at a second selected intermediate point while said reciprocating member is moving from said second position to said first position whereby power is removed from said electric motor for greater than half of each cycle of said reciprocating member.

4,476,419

WINDSHIELD WIPER CONTROL DEVICE

Yoshiaki Fukatsu, Nagoya; Takashi Kurahashi, Aichi; Kazuma Matsui, Toyohashi, and Hiroki Ito, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 31, 1983, Ser. No. 499,405
Claims priority, application Japan, May 31, 1982, 57-92646
Int. Cl.³ H02P 1/04, 7/00
U.S. Cl. 318—444 8 Claims



1. A windshield wiper control device for use on a vehicle having a compartment with a windshield and a windshield wiper movable across the windshield, comprising:

(a) a light-emitting unit adapted to be mounted on the vehicle outside of the compartment for emitting a ray of electromagnetic radiation;

(b) a photodetector unit adapted to be mounted on the vehicle within the compartment and having a slit plate for producing an image of a predetermined pattern with bright and dark areas in response to exposure to said ray of electromagnetic radiation through the windshield and an array of photodetectors for sensing said bright and dark areas of said image and generating signals indicative of said bright and dark areas; and

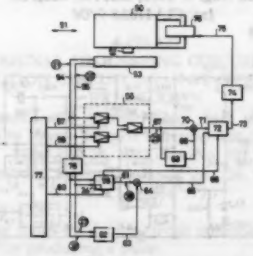
(c) an arithmetic circuit arrangement for computing a contrast of the bright and dark areas based on said signals from said photodetectors and controlling the speed and/or period of operation of the windshield wiper based on said contrast.

4,476,420

CIRCUIT ARRANGEMENT FOR SYNTHESIZING A SINUSOIDAL POSITION SIGNAL HAVING A DESIRED PHASE AND HIGH-RESOLUTION POSITIONING SYSTEM MAKING USE OF THE CIRCUIT ARRANGEMENT

Teruo Asakawa, Nirasaki, Japan, assignor to Telmec Co., Ltd., Japan

Filed Nov. 22, 1982, Ser. No. 443,471
Claims priority, application Japan, Nov. 26, 1981, 56-190389
Int. Cl.³ G05B 1/01
U.S. Cl. 318—608 13 Claims



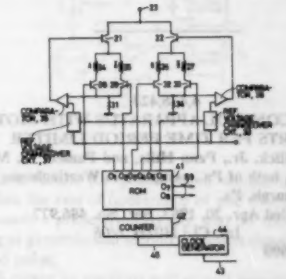
1. A signal synthesizer circuit comprising two multiplier type digital-analog converters, each of which is applied with a digital input signal and an analog input signal and generates an analog output signal that is a product including an algebraic sign of said digital input signal and said analog input signal, and an adder having the respective analog output signals of said two multiplier type digital-analog converters applied to its inputs.

4,476,421

STEPPER MOTOR EXCITING CIRCUIT

Fujio Moriguchi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,611
Claims priority, application Japan, Mar. 8, 1982, 57-35175
Int. Cl.³ H02K 29/04
U.S. Cl. 318—696 9 Claims



1. An exciting circuit for a stepper motor having a plurality of pairs of exciting coils, one of said pairs being provided for each of a plurality of phases, comprising:

memory means for storing digital data representing a predetermined sequence of activation of said exciting coils;

means for activating said exciting coils in response to outputs of said memory means;

counter means for addressing said memory means with a count of a number of pulses of a clock signal applied to said counter means; and

clock signal generating means for producing at least first and second sequences of clock pulses in response to a speed control signal, said first sequence of clock pulses containing only clock pulses at a frequency such that said stepper motor can follow all corresponding changes in activation of said exciting coils and said second sequence of clock pulses containing at least some bursts of clock pulses at a frequency sufficiently high that said stepper motor cannot follow the corresponding changes in activation of said exciting coils.

4,476,422

SINGLE PHASE FOUR POLE/SIX POLE MOTOR

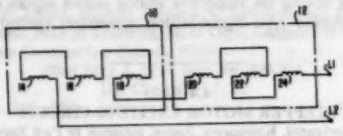
Herbert S. Kirschbaum, Asheville, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 11, 1983, Ser. No. 484,020
Int. Cl.³ H02P 7/48
U.S. Cl. 318—776 26 Claims

1. A single phase alternating current electric motor comprising:

a main stator winding wound to pass through a plurality of uniformly spaced slots in a stator and including two identical coil groups each having three series connected coils wherein all six coils are approximately equally spaced around the motor periphery, corresponding coils in each of said coil groups are spaced 180 mechanical degrees apart, and a first coil in each of said coil groups has a number of turns which differs from the number of turns of the other coils;

means for connecting said two coil groups to form six poles for six pole motor operation; and



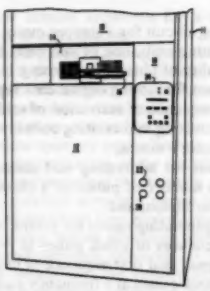
means for connecting said two coil groups to form four poles for four pole motor operation, wherein one of said coil groups has a reversed polarity with respect to its connection for six pole operation.

4,476,423

MOTOR CONTROL APPARATUS WITH MOTOR STARTS PER TIME PERIOD LIMITER

George T. Mallick, Jr., Penn Hills, and Pamela M. Maynard, Wilkinsburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 20, 1983, Ser. No. 486,977
Int. Cl.³ H02H 7/08
U.S. Cl. 318—800 **1 Claim**



1. Motor control apparatus for limiting the starts of a motor to G starts in J time, comprising:

contactor means for being actuated to start a motor;

microprocessor control means interconnected with said contactor means for actuating said contactor means to start said motor;

first memory means interconnected with said microprocessor control means for having stored therein said J time;

clock means connected in relationship with said microprocessor control means for measuring time between starts of said motor;

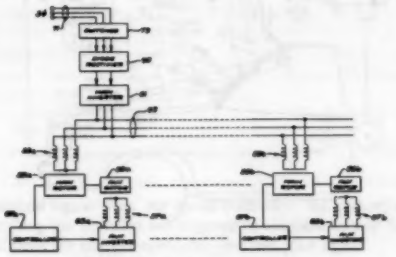
second memory means with G-1 serially related locations set aside therein for having stored therein in sequence by said microprocessor means starting at a first of said G-1 locations said time between successive actual starts of said motor, said time in each memory location being indexed to the next location in sequence for G-1 successive actual motor starts until the Gth motor start is attempted in which case said microprocessor control means compares the accumulated time in all G-1 memory locations with said J time in said first memory means and allows said Gth start to actually take place only if said accumulated time exceeds J time.

4,476,424

VARIABLE SPEED INDUCTION MOTOR DRIVE SYSTEM

Gabor Kalman, Palos Verdes, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed May 3, 1982, Ser. No. 374,375
Int. Cl.³ H02P 5/40
U.S. Cl. 318—832 **7 Claims**



1. A variable speed motor drive system comprising:

a machine housing;

a main machine mounted within said machine housing, said main machine including a main stator assembly and a main rotor assembly;

a main inverted connected to said main stator assembly for supply electric current at a constant voltage level thereto;

supply means connected to said main inverter for supplying a substantially constant dc voltage thereto;

an auxiliary machine mounted within said machine housing, said auxiliary machine including an auxiliary stator assembly and an auxiliary rotor assembly, said auxiliary rotor assembly being connected to said main rotor assembly to permit electric current to flow therebetween;

an auxiliary inverter connected to said auxiliary stator for supplying electric current at a variable voltage level thereto, whereby an electric current is induced in said auxiliary rotor, said induced current flowing from said auxiliary rotor assembly to said main rotor assembly to produce a voltage for line-commutating said main inverter; and

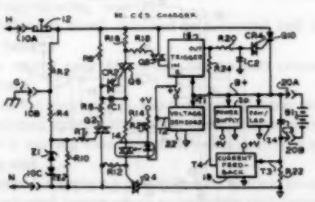
means for controlling the speed of said motor drive system by simultaneously varying the frequency of operation of said main inverter, the frequency of operation of said auxiliary inverter, and the voltage level of said auxiliary inverter while maintaining the voltage level of said main inverter at a constant level.

4,476,425

BATTERY CHARGER

Alan Chernotsky, 36 Lake Shore Dr., Rockaway, N.J. 07866, and Richard Satz, 20 Cedar La., Succasunna, N.J. 07876

Filed Aug. 6, 1982, Ser. No. 406,113
Int. Cl.³ H02J 7/04
U.S. Cl. 320—39 **30 Claims**



1. A battery charger for charging a battery from a primary power source having a high, neutral and ground line and having between the first and the latter two lines a peak voltage

exceeding the maximum battery voltage independently producible by said battery, comprising:

output terminals adapted for connection to said battery;

switch means for periodically coupling said primary power source to said output terminals to raise its voltage above said maximum battery voltage; and

safety means coupled to said power source and operable to disable said switch means and prevent charging in response to the magnitude of voltage between said ground and neutral line exceeding a predetermined safety limit.

4,476,426

ONE-TERMINAL TYPE LEVEL CONTROL CIRCUIT

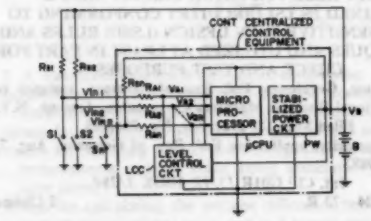
Satoru Kishimoto; Masaharu Atsumi, both of Kakogawa, and Yoshiaki Sano, Kawasaki, all of Japan, assignors to Fujitsu Ten Limited, Kobe and Fijitsu Limited, Kawasaki, both of, Japan

Filed Jun. 3, 1982, Ser. No. 384,633

Claims priority, application Japan, Jun. 5, 1981, 56-86450

Int. Cl.³ H02H *9/04*

U.S. Cl. 323—226 **7 Claims**



1. A one-terminal type level control circuit operatively connected to an input circuit having a signal input terminal, said one-terminal type level control circuit including a signal source circuit supplying a signal to the signal input terminal of the input circuit and including a resistor operatively connected between the signal source circuit and the signal input terminal, the signal source circuit operatively connectable to a first power source, for receiving a first operating voltage, and the input circuit operatively connectable to a second power source, for receiving a second operating voltage, said one terminal type level control circuit comprising:

an input terminal operatively connected to the signal input terminal; and

constant current source means, operatively connected to said input terminal, for providing a constant current characteristic varying in accordance with the value of the first operating voltage so that said one-terminal type level control circuit maintains the voltage at the signal input terminal of the input circuit within a predetermined voltage range.

4,476,427

PULSE SIGNAL PROCESSING CIRCUIT HAVING A PROTECTION CIRCUIT AGAINST OVER-CURRENT BREAKDOWN

Takashi Kaneko, and Masashi Shoji, both of Tokyo, Japan, assignors to Nippon Electric Company Ltd., Tokyo, Japan

Filed Jun. 24, 1982, Ser. No. 391,754

Claims priority, application Japan, Jun. 24, 1981, 56-98018

Int. Cl.³ G05F *1/10*

U.S. Cl. 323—234 **13 Claims**

1. A pulse signal producing circuit comprising:

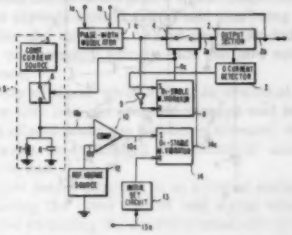
a means for producing a pulse;

an output switching element applied with said pulse and producing an output current in response to said applied pulse;

a first means for generating a first detection signal when said output current is larger than a predetermined value, said first detection signal disappearing before the next pulse is applied to said output switching element;

a second means coupled between said pulse producing means and said output switch element for operatively interrupting the application of said pulse to said output switching element;

a third means for applying said first detection signal to said second means to enable said second means every time said first detection signal is generated;



a fourth means for generating a second detection signal when the rate of occurrence of said first detection signal exceeds a predetermined rate, and for thereafter continuing to generate said second detection signal irrespective of said pulse;

a fifth means for applying said second detection signal to said second means to stop the application of said pulse to said output switching element; and

a sixth means for resetting said fourth means to terminate said second detection signal.

4,476,428

POWER SUPPLY DEVICE

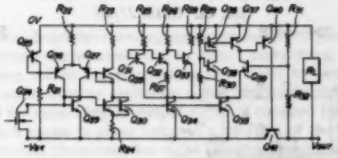
Teruo Iwasawa, and Hitomi Tojiki, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 404,379, Aug. 2, 1982, abandoned, which is a continuation of Ser. No. 273,427, Jun. 15, 1981, abandoned. This application Jun. 20, 1983, Ser. No. 505,117

Claims priority, application Japan, Jun. 16, 1980, 55-83811[U]

Int. Cl.³ G05F *3/20*

U.S. Cl. 323—314 **3 Claims**

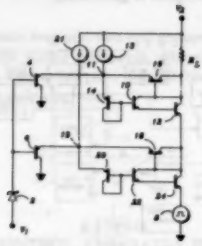


1. In a power supply device having a reference voltage generator circuit for generating an output therefrom in response to a reference voltage, the improvement comprising a constant-current circuit for generating a constant current to obtain the reference voltage, a starting circuit for supplying a starting current to the constant-current circuit and for branching a part of the starting current, and an electronic switch for shunting the starting current so as to turn the constant-current circuit OFF, said starting circuit and said constant-current circuit having active elements and passive resistive elements, said switch having only active elements and being connected only to active elements of said constant-current circuit and said starting circuit.

4,476,429
HIGH VOLTAGE BUBBLE MEMORY PULSE GENERATOR OUTPUT STAGE

Ira Miller, Tempe; Robert N. Dotson, Mesa, and Robert B. Davies, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 27, 1982, Ser. No. 412,070
Int. Cl.³ G05F 5/00
U.S. Cl. 323—299 11 Claims



1. A monolithic integrated circuit for receiving a high voltage and generating therefrom a substantially lower voltage at a node, comprising:

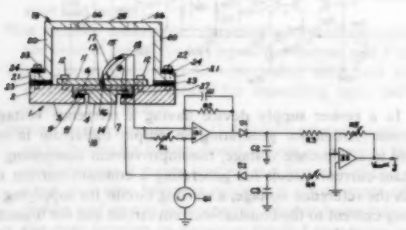
first means for generating a reference voltage; and

at least one voltage level shifting stage including an output transistor having a collector coupled to said high voltage, an emitter coupled to said node, and having a base, said output transistor for acting as a BV_{ceo} level shifter when the collector-emitter voltage reaches BV_{ceo} where BV_{ceo} is the transistor's collector-emitter breakdown voltage with an open base, and for providing a predetermined level shift substantially less than BV_{ceo} when the collector-emitter voltage falls to said predetermined level, and for operating in its active region when its collector-emitter voltage is between BV_{ceo} and said predetermined level.

4,476,430
NON-CONTACT SENSOR FOR DETERMINING MOVING FLAT STEEL STRIP SHAPE PROFILE

Wade S. Wright, 6136 Stonehill Dr., Fairfield, Ohio 45014; John T. Voisine, 7027 Dalewood Dr., Middletown, Ohio 45042, and Glenn S. Huppi, 6492 Coachlight Way, West Chester, Ohio 45069

Filed Apr. 5, 1982, Ser. No. 365,791
Int. Cl.³ G01R 27/26
U.S. Cl. 324—61 R 5 Claims



1. A non-contact sensor for measuring changes in capacitance between the sensor and a major surface of a moving electrically conducting strip of indefinite length comprising:

a centrally located electrically conducting active plate having a generally planar undersurface configured to be positioned in spaced parallel relationship with a major surface of the strip;

an electrically conducting shield plate having a generally planar undersurface and a central opening configured to nestingly accept said active plate such that said active and shield plate surfaces are substantially coplanar;

means for electrically isolating said active and shield plates;

an oscillator producing a high frequency output signal connected to said shield plate for impressing said signal on said shield plate;

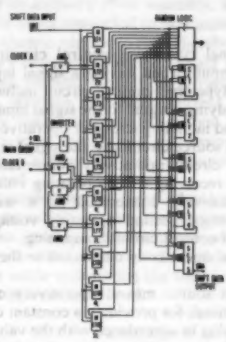
a differential amplifier having a first differential input electrically connected to said active plate and a second differential input electrically connected to said oscillator output and said shield plate; and

means for subtracting the output signals from said amplifier and said oscillator to eliminate common signals between said shield and active plates and produce an electrical output signal representative of the capacitance between said active plate and the major surface of the strip.

4,476,431
SHIFT REGISTER LATCH CIRCUIT MEANS CONTAINED IN LSI CIRCUITRY CONFORMING TO LEVEL SENSITIVE SCAN DESIGN (LSSD) RULES AND TECHNIQUES AND UTILIZED AT LEAST IN PART FOR CHECK AND TEST PURPOSES

Arnold Blum, Gechingen, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,995
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029883
Int. Cl.³ G01R 15/12; H03K 3/284
U.S. Cl. 324—73 R 5 Claims



1. In a functional logic unit for performing at least one logical function, said functional logic unit including shift register latch circuit means, said shift register latch circuit means comprising:

m master latch circuits, each master latch circuit having an input and an output, where m is a positive integer;

said m master latch circuits being interconnected into k groups of master latch circuits;

n slave latch circuits, each slave latch circuit having an input and an output, where n is a positive integer and m=kn; and

controllable circuit means interconnecting each of said k groups of master latch circuits with said n slave latch circuits for forming any one of k shift registers at a given instant in time, and wherein each one of said k shift registers includes a distinct one of said k groups of master latch circuits interconnected with said n slave latch circuits, each one of said k shift registers having n shift register stages, an input, and an output and where each of said n

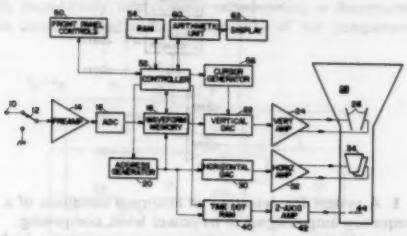
shift register stages is a shift register latch consisting of a master latch circuit and one of said n slave latch circuits.

4,476,432

WAVEFORM MEASUREMENT SYSTEM

David H. Olson, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 10, 1982, Ser. No. 347,742
Int. Cl.³ G01R *13/20*; H01J *29/52*
U.S. Cl. 324—121 R 7 Claims



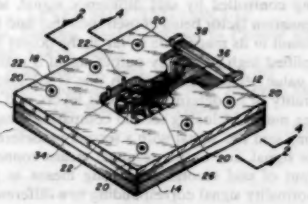
1. A waveform measurement system, comprising:
input means for selectively receiving and storing a time-varying electrical signal and a ground reference potential;
means for providing a waveform display of said signal;
means for selecting a time point along said waveform, an instantaneous voltage value being associated with said time point;
means for calculating the voltage difference between said instantaneous voltage value and said stored ground reference potential; and
means for providing a readout display of said voltage difference.

4,476,433

ELECTRONIC TEST FIXTURE

John K. Logan, 26527 Silver Spur Rd., Rancho Palos Verdes, Calif. 90274

Filed Sep. 7, 1982, Ser. No. 415,339
Int. Cl.³ G01R *1/06*
U.S. Cl. 324—158 P 4 Claims



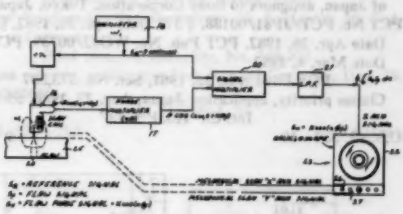
1. A microelectronic circuit board node point and inspection point continuity testing fixture comprising:
(a) a body having a cavity located therein;
(b) a top plate having a plurality of bores clustered in geometrical array directly aligned with said cavity and juxtapositioned with said body;
(c) attaching means to fasten said top plate to said body for unitary containment therewith;
(d) a plurality of probe pins having a hole therethrough on the first end;
a solid cylindrical body having a first and second end;
a shoulder on said first end having a larger diameter than the second and a flat terminating surface for captivating said pin within said cavity while slideably retained within said top plate bores;
a tapered sharp point on said second end for contacting said circuit board node points and inspection points when urged thereupon;
said probe pins
slideably penetrating said top plate bores with said first end exposed on one side and the second end exposed on the other for engagement of said circuit board points;
(e) a resilient pad disposed within said body cavity contiguous with the first end of said probe pins providing compliance of said circuit board points when compressibly urged upon the exposed second end of said pins being individually under the influence of said pad in an independent manner compressibly forcing each pin into autonomous compliance;
(f) a plurality of signal wires having an electrical insulated envelope with one end attached through said hole in the first end of said probe pin and being disposed within said body cavity for extending the electrical conductivity therefrom; and,
(g) connector means attached to an external surface of said body having the other end of said signal wires affixed thereto for extending the electrical conductivity from said circuit board through said pins providing means to test node points and inspection points of said circuit board.

4,476,434

NON-DESTRUCTIVE TESTING METHOD AND APPARATUS UTILIZING PHASE MULTIPLICATION HOLOGRAPHY

H. Dale Collins, Richland; James M. Prince, Kennewick, and Thomas J. Davis, Richland, all of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 25, 1982, Ser. No. 342,431
Int. Cl.³ G01R *33/12*; G01N *27/72*
U.S. Cl. 324—233 8 Claims



4. A non-destructive testing apparatus for identifying internal structural characteristics of an object, comprising:
scanning means for penetrating the object by waveform radiation from an excitation signal of constant frequency and for generating an output signal of constant frequency which varies in phase value as a function of the internal structural characteristics of the object encountered by the radiation;
phase multiplier means for multiplying the frequency and phase values of the output signal by a preselected number;
reference means operatively connected to said scanning means for producing a reference excitation signal by multiplying the constant frequency of said scanning means by said preselected number;
means for detecting phase differences between the multiplied output signal and the reference excitation signal;
plotting means for producing a two dimensional fringe pattern of internal structural characteristics of the object by recording a scanned plot of the object as a function of detected phase differences between the multiplied output signal and the reference excitation signal; and
means for reconstructing the fringe pattern by holographic

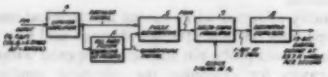
techniques to produce a visual image of the internal structural characteristics of the object.

4,476,435

DIGITAL DEMODULATION OF FREQUENCY MODULATED SIGNALS

Hyokang Chang, New Haven; Kishan Shenoi, Fairfield, and Bgakwati P. Agrawal, Shelton, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,735
Int. Cl.³ H03D *3/00*; H03K *9/08*
U.S. Cl. 329—50 **34 Claims**



1. A digital frequency modulation (FM) demodulator to convert an analog FM signal having a carrier signal component and an analog modulation signal component to a digital representation of said modulation signal component comprising:

first means responsive to said FM singal and a delayed version thereof to produce a pulse duration modulated (PDM) signal proportional to said modulation signal component; and

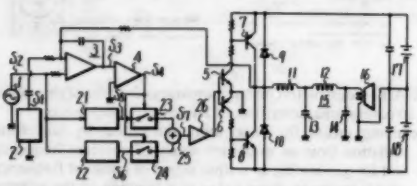
second means coupled to said first means responsive to said PDM signal to produce a digital signal representative of said modulation signal component.

4,476,436

POWER AMPLIFIER

Akio Koizumi, Funabashi, and Hiroshi Yamagishi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP81/00188, § 371 Date Apr. 26, 1982, § 102(e) Date Apr. 26, 1982, PCT Pub. No. WO82/00739, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 25, 1981, Ser. No. 373,507
Claims priority, application Japan, Aug. 27, 1980, 55-118200
Int. Cl.³ H03F *3/387*
U.S. Cl. 330—10 **9 Claims**



1. A power amplifier having means for generating a pulse width modulation signal proportional to the amplitude of an input signal comprising, in combination;

a pair of level shifting means, means supplying said input signal to each of said level shifting means, a pair of switching means connected individually to said level shifting means for switching output signals from said pair of level shifting means in response to said pulse width modulation signal,

adding means connected to said switching means for adding output signals from said switching means, wherein the pulse width modulation signal is amplitude-modulated in accordance with the level of the input signal,

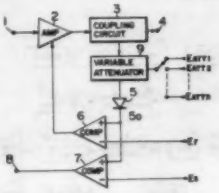
and a power amplifying stage connected to receive the output of said adding means.

4,476,437

SYSTEM FOR DETECTING ABNORMAL CONDITION OF HIGH FREQUENCY OUTPUT SIGNAL IN ITS POWER LEVEL

Yukinari Fujiwara, Musashimurayama, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,439
Claims priority, application Japan, Mar. 20, 1981, 56-39650
Int. Cl.³ H03G *3/20*
U.S. Cl. 330—138 **2 Claims**



1. A system for detecting an abnormal condition of a high frequency output signal in its power level, comprising:

variable gain power amplifier means receiving a high frequency input signal to produce an amplified high frequency output signal therefrom;

negative feedback control loop means connected to said power amplifier means and for automatically setting the power level of said amplified high frequency output signal to a desired one of a plurality of predetermined power levels, said negative feedback control loop means including variable attenuator means connected to an output of said power amplifier means and for attenuating the level of a high frequency output signal from said amplifier means with a variable attenuation factor, means for selecting one of a plurality of attenuation signals respectively corresponding to said plurality of predetermined power levels such that said selected attenuation signal corresponds to said desired power level and for applying said selected attenuation signal to said attenuator means so that the attenuation factor is set correspondingly to said selected attenuation signal, detector means for converting an output signal of said attenuator means into a DC signal, and first comparing means for comparing said DC signal with a first predetermined reference signal to produce a difference signal, the gain of said power amplifier means being controlled by said difference signal, said variable attenuation factor being chosen such that said DC signal is constant in its magnitude so far as the power level of said amplified high frequency output signal is maintained at a set value regardless of which one is selected from said plurality of predetermined power levels; and

judging means including second comparing means for comparing said DC signal with a second predetermined reference signal, and output terminal means connected to the output of said second comparing means to produce an abnormality signal corresponding to a difference signal of said second comparing means.

4,476,438

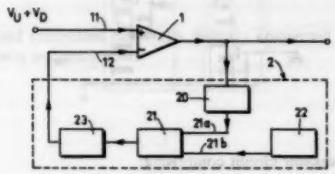
MULTIPLIER CIRCUIT INCLUDING AMPLIFIER WITH DRIFT COMPENSATION CIRCUIT

Christian Cantou, Combs-la-Ville, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,845
Claims priority, application France, Nov. 3, 1980, 80 23468
Int. Cl.³ H03F *1/26, 1/34*
U.S. Cl. 330—149 **11 Claims**

1. A compensated multiplier stage comprising a multiplier circuit having a first input for receiving an electric signal comprising an intermittent useful signal V_U and a spurious component V_D and a second input for receiving a quantized

signal V_{Qi} which varies cyclically and in steps with the index i of the signal V_{Qi} varying from 1 to N, an amplifier having an output and first and second inputs of opposite sign, said multiplier circuit having an output supplying the product signal V_{Qi} (V_U+V_D) to the first input of the amplifier, a negative feedback circuit coupled between the amplifier output and the second input of the amplifier, said negative feedback circuit comprising; a comparator having an input coupled to the output of the amplifier for comparing the spurious component V_D with a reference signal at recurrent time intervals when the useful signal V_U is absent, a counter having first and second inputs coupled to an output of the comparator and to a clock circuit, respectively, said counter incrementing or decrementing its count depending on the polarity of the comparator



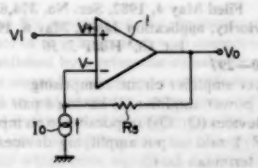
output signal and in synchronism with the clock circuit signals during said recurrent time intervals, a memory having N memory locations, means coupling the memory between an output of the counter and an input of a digital-to-analog converter, the memory storing, for each value of the index i and as a function of the value of the output signal of the comparator, the digital value of the feedback signal associated with said index value, the memory retaining said digital value at least until a new comparison is made for the same value of the cyclically varying index i, means connecting an output of the memory to a third input of the counter, and means coupling an output of the digital-to-analog converter to the second input of the amplifier to supply thereto an analog negative feedback signal determined by said spurious component V_D.

4,476,439

LEVEL SHIFTING CIRCUIT

Reisuke Sato, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 26, 1981, Ser. No. 266,785
Claims priority, application Japan, May 26, 1980, 55-69794
Int. Cl.³ H03F 3/45; H03G 3/18
U.S. Cl. 330—254 **9 Claims**



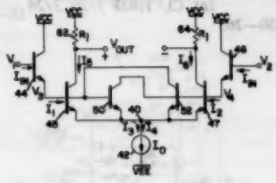
1. A level shifting circuit, consisting of an operational amplifier; a feedback element provided between an inverting input of said operational amplifier and an output thereof; and a constant current source, an output of said constant current source being connected only to said inverting input of said operational amplifier, a signal to be level shifted being applied only to a noninverting input of said operational amplifier.

4,476,440

CROSS COUPLED AMPLIFIER

Robert M. Bennett, Jr., Ham Lake, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 28, 1981, Ser. No. 305,996
Int. Cl.³ H03F 3/45, 1/38
U.S. Cl. 330—260 **9 Claims**



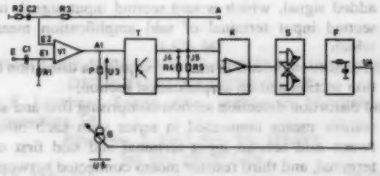
1. An improved differential amplifier comprising:
two Darlington transistor pairs;
a constant current circuit and means for connecting it with said Darlington transistor pairs to form a differential amplifier with the two Darlington pairs forming the opposite sides of said amplifier; and
cross-coupling transistors and means for connecting said cross-coupling transistors between the opposite sides of said amplifier to provide complementary positive feedback of gain less than one between said sides and to cause said differential amplifier to have a negative input impedance.

4,476,441

PUSH-PULL POWER AMPLIFIER

Zdzislaw Gulczynski, Rosenheimerstr. 30, 8 Munich 80, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,202
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048648
Int. Cl.³ H03F 3/26
U.S. Cl. 330—262 **8 Claims**



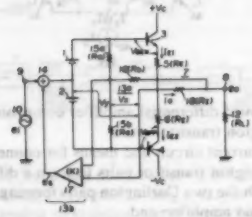
1. A regulator for a power amplifier with push-pull output stage, including output transistors, said regulator comprising sampling means cascaded with said output transistors for sampling their quiescent current, at least two comparators with inputs connected to said sampling means for sampling quiescent current dependent voltage drops across said inputs, means for supplying reference voltages to said comparators in order to predetermine the voltages at which said voltage drops are sampled, and digital storage means coupled to outputs of said comparators for providing at least one corrective digital signal to analog storage means connection to outputs of said digital storage means, said storage means providing at least one corrective analog signal to said output stage with which analog signal the desired value of quiescent current can be corrected.

4,476,442

AMPLIFIER WITH DISTORTION CANCELLATION

Masayuki Iwamatsu, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Mar. 24, 1982, Ser. No. 361,203
Claims priority, application Japan, Apr. 3, 1981, 56-50070; Apr. 3, 1981, 56-50071; Apr. 3, 1981, 56-50072; Apr. 3, 1981, 56-50074; Apr. 3, 1981, 56-50075
Int. Cl.³ H03F 1/26, 3/26
U.S. Cl. 330—265 10 Claims



1. An amplifier comprising:

a first input terminal to which a first input signal to be amplified is applied;

a first output terminal from which an amplified first output signal is derived;

amplification means having a second input terminal and a second output terminal for amplifying a second input signal appearing at said second input terminal and producing at said second output terminal an amplified second output signal therefrom, said amplified second output signal being fed to said first output terminal;

distortion detection means for detecting, in accordance with said second input signal and said amplified second output signal, distortion generated in said amplification means and producing a third output signal therefrom; and

addition means connected between said first input terminal and said second input terminal for adding said third output signal to said first input signal in order to feed the resultant added signal, which is said second input signal, to said second input terminal of said amplification means; in which

said distortion detection means comprises a distortion detection section and an amplification section,

said distortion detection section comprising first and second resistor means connected in series with each other between said second input terminal and said first output terminal, and third resistor means connected between said second output terminal and said first output terminal, wherein a path of said amplification means between said second input and output terminals and said first, second and third resistor means constitutes a bridge circuit,

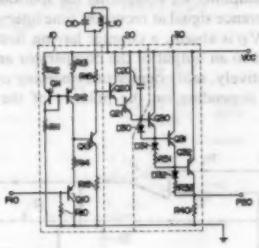
said amplification section receiving a first signal component which varies non-linearly in accordance with the second input signal and appears at the connection point of said third resistor means and said second output terminal, and a second signal component which varies linearly in accordance with the second input signal and appears at the connection point of said first and second resistor means, and discriminating said first signal component from said second signal component to produce only a distortion component of said second output signal as the third output signal.

4,476,443

TRANSISTOR CIRCUIT

Hiroshi Gomi, Kumagaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 5, 1982, Ser. No. 355,141
Claims priority, application Japan, Mar. 31, 1981, 56-46175
Int. Cl.³ H03F 3/04
U.S. Cl. 330—288 13 Claims



1. A transistor circuit comprising:

a signal input;

a first current mirror circuit including a first transistor having a base coupled to said signal input, a collector coupled to a power source and an emitter, a first PN junction having a first terminal coupled to the base of said first transistor, the conductivity type of the first terminal of the first PN junction being the same as that of the transistor base, and a first resistor having a resistance greater than zero (short circuit) and less than infinity (open circuit) coupling a second terminal of said first diode to said emitter of said first transistor;

a second current mirror circuit including a second transistor having a base coupled to said emitter of said first transistor so as to be in Darlington circuit configuration therewith, a collector coupled to a power source and an emitter, a second PN junction having a first terminal coupled to the base of said second transistor, the conductivity type of the first terminal of the second PN junction being the same as that of the second transistor base, and a second resistor having a resistance greater than zero (short circuit) and less than infinity (open circuit) coupling a second terminal of said second PN junction to said emitter of said second transistor; and

a signal output coupled to said emitter of said second transistor.

4,476,444

POWER AMPLIFIER CIRCUIT

Satoshi Ishii, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,659
Claims priority, application Japan, May 6, 1981, 56-67953
Int. Cl.³ H03F 3/30
U.S. Cl. 330—297 12 Claims

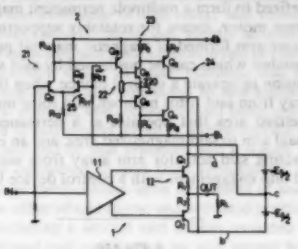
1. A power amplifier circuit comprising:

a class A power amplifier (1) having a pair of output amplifying devices (Q_1, Q_2) responsive to an input for driving a load (R_L), said output amplifying devices having power supply terminals (a, b);

a power supply (E_o) connected between said power supply terminals for producing a voltage; and

a class B power amplifier (2) drivable by said input and having a pair of push-pull connected output amplifying devices (Q_3, Q_4) and including respective outputs connected to said power supply terminals, respectively, and a pair of amplifying devices (Q_5, Q_6) for driving said push-pull connected output amplifying devices, said amplifying

devices having first controlled electrodes for driving said push-pull connected output amplifying devices, and sec-



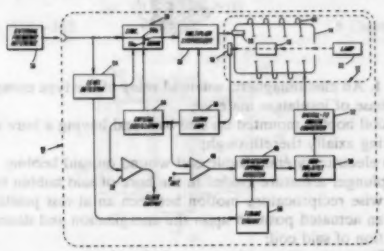
ond controlled electrodes directly connected to a common potential point.

4,476,445

METHODS AND APPARATUS FOR RAPID AND ACCURATE FREQUENCY SYNTONIZATION OF AN ATOMIC CLOCK

William J. Riley, Jr., Hamilton, Mass., assignor to EG&G, Inc., Wellesley, Mass.

Filed May 18, 1982, Ser. No. 379,300
Int. Cl.³ H03L 7/26
U.S. Cl. 331—3 18 Claims



1. A method for syntonizing the frequency of a passive atomic resonator of an atomic clock with respect to a reference frequency established by a reference signal, the atomic clock including input means for supplying a variable frequency interrogation signal to said resonator, output means for providing an error signal indicative of the difference between the frequency of said variable interrogation signal and the frequency of said resonator which error signal may be used to control the frequency of said variable interrogation signal, and adjustment means for selectively altering the frequency of said resonator, said method comprising the steps of:

a. replacing said variable frequency interrogation signal with a reference interrogation signal having said reference frequency; and

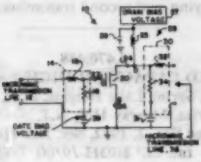
b. adjusting the frequency of said resonator by using said error signal to control operation of said adjustment means.

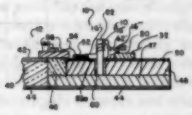
4,476,446

IMPEDANCE MATCHING NETWORK FOR FIELD EFFECT TRANSISTOR

Ronald E. Blight, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 295,978, Aug. 25, 1981, abandoned.
This application Aug. 12, 1983, Ser. No. 522,552
Int. Cl.³ H01P 5/00
U.S. Cl. 333—32 4 Claims





1. An impedance matching network comprising:

a support having an alignment opening therein;

a field effect transistor disposed on a surface of the support;

a resistor disposed on said surface of the support and coupled in shunt with a pair of electrodes in the field effect transistor;

a microwave transmission line; and

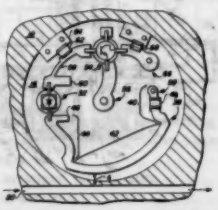
an inductor comprising a length of a wire coiled about a region, the coiled portion of the wire aligned over the alignment opening, and having a pair of ends disposed over the surface, a first end electrically coupled to a first one of the electrodes of the pair of electrodes of the field effect transistor and having a second end electrically coupled to the microwave transmission line.

4,476,447

ADJUSTABLE DIRECTIONAL COUPLER AND POWER DETECTOR UTILIZING SAME

John K. Lauchner, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 7, 1982, Ser. No. 415,092
Int. Cl.³ H01P 5/04
U.S. Cl. 333—111 18 Claims



1. An adjustable directional coupler comprising:

a first transmission line comprising a first transmission line conductor and grounding means;

a second transmission line comprising a second transmission line conductor and grounding means, a coupling portion of said second transmission line conductor being juxtaposed with said first transmission line conductor, being pivotally mounted with respect thereto and being adapted to vary a coupling distance therebetween with a pivotal motion; and

turntable means adjacent said first transmission line conductor for carrying said second transmission line conductor.

4,476,448

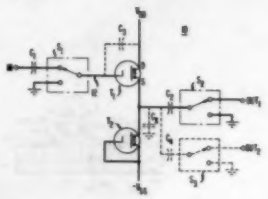
SWITCHED CAPACITOR HIGH-PASS FILTER

Veikko R. Saari, Spring Lake Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 2, 1982, Ser. No. 414,012

Int. Cl.³ H03H *19/00, 7/48*

U.S. Cl. 333—173 **6 Claims**



1. A switched capacitor filter, comprising:

a first capacitor for receiving an input at one side;

a buffer amplifier means having an input port and an output port;

a first toggle switch means responsive to a switching pulse train to connect said input port alternately to a reference potential and to the other side of said first capacitor;

a second capacitor connected at one side to said buffer output port; and

a second toggle switch means responsive to a second switching pulse train to connect the other side of said second capacitor alternately to a reference potential and to an output terminal.

4,476,449

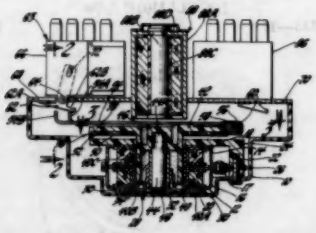
SWITCH ACTUATOR FOR A REMOTE CONTROL UNIT

Ronald N. Gray, and Ronald G. Davis, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 4, 1983, Ser. No. 481,791

Int. Cl.³ H01H *9/00*

U.S. Cl. 335—138 **4 Claims**



1. An actuator for selectively operating a plurality of circumferentially spaced control devices located substantially in a circular array comprising, an electric stepper motor having a stator, a one-piece rotor member comprised of magnetic material having a portion located adjacent a bore of said stator that is magnetized to form a multipole permanent magnet rotor for the stepper motor, means for rotatably supporting said rotor, an actuator arm formed of magnetic material pivoted to said rotor member which can be positioned by said stepper motor to a position to operate a control device when the arm is pivoted away from said rotor member, said rotor member having a magnetized area that operates as a permanent magnet to attract said arm to said magnetized area, and an electromagnet for attracting said actuator arm away from said magnetized area and into engagement with a control device to operate the same.

4,476,450

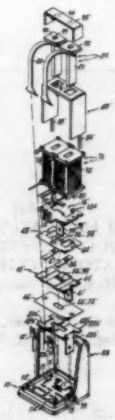
ELECTROMAGNETIC SOLENOID RELAY

Samuel J. Brown, South Lyon, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Oct. 22, 1982, Ser. No. 436,145

Int. Cl.³ H01H *51/06, 1/12*

U.S. Cl. 335—196 **5 Claims**



1. An electomagnetic solenoid relay of the type comprising:

a base of insulation material;

a coil bobbin mounted on said base and having a bore extending axially therethrough;

an electrically energizable coil wound on said bobbin;

a plunger armature guided in the bore of said bobbin for endwise reciprocatory motion between an at-rest position and an actuated position upon the energization and deenergization of said coil;

a first contact secured to an end of said armature;

ferromagnetic circuit means embracing said coil bobbin for attraction of said armature to its actuated position in response to the energization of said coil;

electrical terminal means;

a second contact electrically connected to said terminal means for engagement by said first contact upon movement of said armature to one of its said at-rest and actuated positions; and

a resilient spring for urging said armature to its at-rest position, said electromagnetic solenoid relay being further characterized by:

said terminal means including discrete terminals, said second contact being electrically connected to a said terminal, each said terminal including a plate portion and an integral blade portion extending transversely from said plate portion, said terminal plate portion of a plurality of said terminals being arranged in stacked relationship with one another substantially parallel to and being supported by said base, said stacked relationship including terminal plate

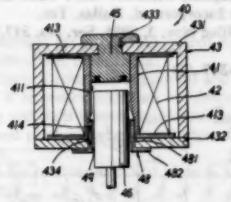
portions in at least three successive layers, said terminals being electrically insulated from one another and the respective said terminal blade portions extending through said base and externally of said relay, said terminals including first, second, third and fourth terminals each having a respective said plate portion in one of said at least three successive layers of plate portions, said resilient spring being electrically connected to said armature and to said first terminal, said second contact being electrically connected to said second terminal, a third contact secured to the other end of said armature and a fourth contact eletrically connected to said third terminal for engagement by said third contact upon movement of said armature to the other of said at-rest and activated positions, and further including a second said bobbin mounted on said base, a second said coil wound on said second bobbin, a second said plunger armature guided in the bore of said second bobbin, second ferromagnetic circuit means embracing said second coil bobbin, a second said resilient spring for urging said second armature to its at-rest position, said second resilient spring being electrically connected to said second armature and to said fourth terminal, a fifth contact secured to an end of said second armature, a sixth contact electrically connected to said second terminal for engagement by said fifth contact upon movement of said second armature to one of its said at-rest and actuated positions, a seventh contact secured to the other end of said second armature, and an eigth contact electrically connected to said third terminal for engagement by said seventh contact upon movement of said second armature to the other of its said at-rest and actuated positions, whereby there is provided a double-pole, double-throw relay for dynamic breaking.

4,476,451

SOLENOID ACTUATOR

Seiji Kosugi, Iwatsuki, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 336,185, Dec. 31, 1981, abandoned. This application May 20, 1983, Ser. No. 496,655
Claims priority, application Japan, Jan. 9, 1981, 56-2158[U]
Int. Cl.³ H01F 7/08
U.S. Cl. 335—262 **8 Claims**



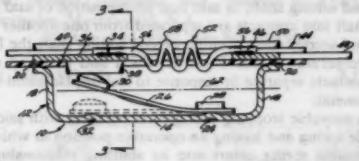
1. A solenoid actuator comprising a non-magnetic reel-shaped bobbin wound therearound with an energizing coil, a magnetic frame disposed to the outside of said bobbin for forming magnetic flux paths, a magnetic flanged member having a cylindrical portion and a flanged portion with the cylindrical portion inserted into the central aperture in said bobbin for reinforcing the bobbin structure and reducing the magnetic resistance and a pair of cores inserted directly into the central aperture in said bobbin that exert electromagnetic force toward each other upon supply of energizing current to said coil, the outer circumferential surface of one of the cores which is made movable being opposed directly with a slight gap to the inner surface of the cylindrical portion of said flanged member and the flanged portion of said flanged member being in contact with said magnetic frame, so as to attract said movable core to the other of the cores by said electromagnetic force, wherein the inner surface of the cylindrical portion of said flanged member is coated with a thin film made of feeble or non-magnetic and wear-resistant material.

4,476,452

MOTOR PROTECTOR

John R. D'Entremont, Foxboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 27, 1982, Ser. No. 424,826
Int. Cl.³ H01H 61/02
U.S. Cl. 337—102 **8 Claims**



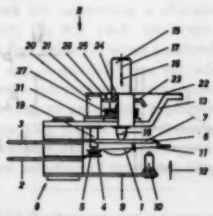
1. A thermally responsive electrical circuit protector comprising an electrically and thermally conductive housing having a bottom wall and upstanding side walls with an open top, the side walls having free ends formed into a ledge portion, a lid disposed on the ledge portion with an electrically insulative gasket interposed therebetween to electrically separate the housing from the lid, means to clampingly attach the lid to the housing, heat responsive electrical switch means disposed in the housing adapted to electrically connect and disconnect the housing and the lid upon the occurrence of selected thermal conditions characterized in that the lid comprises first and second spaced, discrete portions, the first portion mounts a portion of the switch means and the second portion is formed with an elongated portion extending beyond housing to serve as a terminal and a heater element is provided having two opposite ends, one end electrically and mechanically connected to the first portion and the other end electrically and mechanically connected to the second portion.

4,476,453

TEMPERATURE RESPONSIVE SWITCH

Walter Hollweck, Nuremberg, Fed. Rep. of Germany, assignor to Thermostat- und Schaltgerätebau GmbH & Co., Bad Kissingen, Fed. Rep. of Germany

Filed Feb. 10, 1983, Ser. No. 465,637
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204638
Int. Cl.³ H01H 37/26
U.S. Cl. 337—361 **13 Claims**



1. A temperature responsive switch comprising
(a) a bimetal arranged for displacement in response to temperature changes;
(b) a displaceably arranged setting arm;
(c) a stationary first contact;
(d) a bistable, over-the-center spring mounted on said setting arm and carrying a second contact cooperating with said first contact; said bistable spring having a first state in

which said bistable spring urges said second contact towards engagement with said first contact and a second state in which said bistable spring urges said second contact away from said first contact; said bimetal being operatively connected with said bistable spring for moving said bistable spring from said first state towards and into said second state beyond a dead center position thereof;

(e) a setting shaft operatively connected with said setting arm and being rotatably and axially displaceably supported for displacing said setting arm and said bistable spring between first and second angular limit positions of said setting shaft; in said first limit position of said setting shaft said contacts are separated from one another and in said second limit position of said setting shaft the highest temperature value is set at which said first and second contacts separate in response to the displacement of said bimetal;

(f) a movable stopping plunger cooperating with said bistable spring and having an operative position in which said bistable spring enters into an abutting relationship with said stopping plunger prior to reaching said dead center during a displacement of said bistable spring in said first state towards said second state;

(g) a holding spring cooperating with said stopping plunger and arranged for assuming first and second positions; in said first position of said holding spring said holding spring maintains said stoping plunger in the operative position thereof, whereby said bistable spring is prevented by said stopping plunger from assuming said second state; in said second position of said holding spring said stopping plunger allows said bistable spring to assume said second state; and

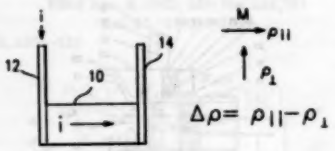
(h) a cam affixed to said setting shaft for rotation therewith; said cam being operatively connected with said holding spring for setting said holding spring in said first or second position thereof dependent upon an angular position of said setting shaft; said cam moving said holding spring into and maintaining said holding spring in the second position thereof when said setting shaft is in an angular position corresponding to a temperature setting in a high temperature range.

4,476,454

NEW MAGNETORESISTIVE MATERIALS

Joseph A. Aboaf, Tucson, Ariz.; Erik Klokholm, Stamford, Conn., and Thomas R. McGuire, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,739
Int. Cl.³ H01L *43/08, 43/10*
U.S. Cl. 338—32 R **17 Claims**



1. A device responsive to a magnetic field including in combination:

at least one magnetoresistive element exhibiting a negative anisotropic magnetoresistance $\Delta\rho = \rho_{||} - \rho_{\perp}$ at room temperature, said magnetoresistive element being comprised of a material chosen from the group consisting of Ni, Fe, and Co together with Ir, and ferromagnetic alloys and compounds of Ni, Fe, or Co together with Ir, the amount of Ir present being an amount sufficient to cause negative anisotropic magnetoresistance, and

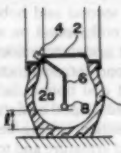
a source of current through said element, wherein the magnetoresistance of said element changes when said element is intercepted by said magnetic field.

4,476,455

TIRE DEFLATION WARNING DEVICE

Masafumi Kawakami, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Dec. 21, 1981, Ser. No. 332,758
Claims priority, application Japan, Dec. 26, 1980, 55-186031
Int. Cl.³ B60C *23/00*
U.S. Cl. 340—58 **3 Claims**



1. A tire deflation warning device which comprises in combination:

a shielding case tightly mounted in a water and gas tight manner on a rim of a wheel having a tubeless tire thereon;

a rocking rod having first and second ends opposite to each other with an intermediate portion therebetween, said first and second ends being respectively situated inside said shielding case and said tubeless tire, said rocking rod being pivotable about its intermediate portion in at least one direction from a neutral position;

a biasing means for holding said rocking rod in said neutral position; and

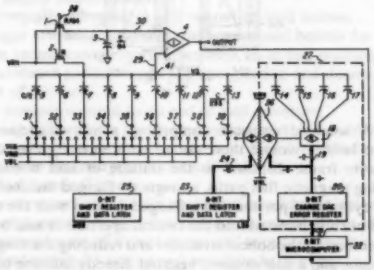
means for providing an indication of the loss of air from said tire each time said rocking rod is pivoted from and back to said neutral position.

4,476,456

COMBINATION OF AN ANALOG TO DIGITAL CONVERTER AND SAMPLING SWITCH

John C. Domogalla, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 3, 1981, Ser. No. 317,715
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **4 Claims**



1. In a combination of an analog to digital converter having a comparator means with a first and second terminal for comparing signals on the first terminal to signals on the second terminal and first and second reference terminal means for providing a first and second reference signal to the analog to digital converter, an analog input means for receiving an analog signal for conversion to a digital signal, a plurality of

capacitors connected in a capacitor array each with a first and second side, the first side being connected to a node, the plurality of capacitors being connected in an array arrangement with the first side connected together and to the first terminal for redistribution of charge representative of the analog signal, sampling switch means for obtaining a digital representation of the analog signals, the sampling switch means comprises:

a first switch means for selectively connecting and disconnecting the reference terminal means to the second terminal;

a connected capacitance means for scaling the first switch means to the second switch means and the capacitor array;

a second switch means for selectively connecting and disconnecting the reference terminal means to the first side of the capacitor array;

a third switch means for selectively connecting and disconnecting each second side of the plurality of capacitors between the reference terminal means and the analog input means; and

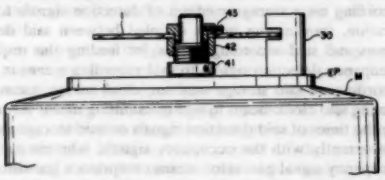
switch control means for controlling the selective connection and disconnection of the first, second and third switch means by connecting the first and second switch means to the reference terminal, disconnecting the first and second switch means from the reference terminal and connecting the switch third switch means from the reference terminal means to the analog input means.

4,476,457

ROTARY ENCODER

Shiroh Kondo, Sagamihara, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Feb. 16, 1982, Ser. No. 349,152
Claims priority, application Japan, Feb. 17, 1981, 56-21899
Int. Cl.³ G01D *5/34*; H03D *13/00*
U.S. Cl. 340—347 P **9 Claims**



1. A rotary encoder for producing output signal having a variable phase difference, comprising:

a first plate which is rotatably supported and which is provided with a reference indicium of alternate non-light-transmitting and light-transmitting sections arranged at a predetermined pitch circularly around an axis of rotation of said plate;

driving means for rotating said first plate in a plane defined by its surface;

a light source for irradiating light radially from said light source to said first plate;

a second plate which is provided with a pair of first and second indicia, each including at least one light transmitting section, said first and second indicia being arranged such that when either one of said first and second indicia is in phase with said reference indicium, the other is shifted in phase with said reference indicium with respect to the direction of movement of said reference indicium, and that said first and second indicia receive said light from said light source through said reference indicia at differing incidence angles;

a pair of first and second light-receiving elements, said first light-receiving element being disposed to receive said light as passed through reference and said first indicia, and said second light-receiving element being disposed to receive said light as passed through said reference and said second indicia; and

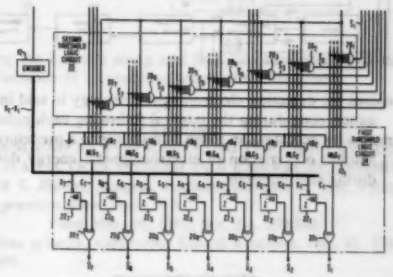
adjusting means for adjusting the position of at least one of said first and second plates variable with respect to the other and said light source such that a ratio between a distance from said light source to said first plate and a distance from said light source to said second plate is varied thereby correspondingly varying the relative phase of said output signals.

4,476,458

DUAL THRESHOLD DECODER FOR CONVOLUTIONAL SELF-ORTHOGONAL CODES

Peter M. Dollard, Highlands, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 14, 1982, Ser. No. 387,954
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DD **5 Claims**



1. A decoder (10) for convolutional self-orthogonal codes comprising

a multistage syndrome register (16) for storing a plurality of parity bits (S_{47}–S_0);

a first majority logic circuit (24) responsive to both a predetermined selection of parity bits from said plurality of parity bits and a plurality of received information bits (X_1–X_7) for generating a plurality of information correction bits (C_1–C_7) which correspond in a one-to-one relationship with said plurality of information bits, each information bit comprising a first value (1) when a first threshold level is surpassed and a second value (0) when said first threshold level is not surpassed, said first majority logic circuit producing as an output a plurality of corrected information bits (X_1–X_7; and

a second majority logic circuit (26) responsive to the predetermined selection of parity bits from the multistage syndrome register for generating a plurality of syndrome correction bits (S_1–S_7), each syndrome correction bit comprising a first value (1) when a second threshold level is surpassed and a second value (0) when said second threshold level is not surpassed, said second majority logic circuit producing as an output a plurality of corrected syndrome bits (S') which are subsequently applied as inputs to said multistage syndrome register to replace said predetermined selection of syndrome bits.

4,476,459

THEFT DETECTION METHOD AND APPARATUS IN WHICH THE DECAY OF A RESONANT CIRCUIT IS DETECTED

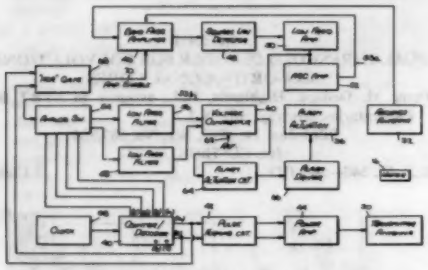
Michael N. Cooper, Flushing, and Peter A. Pokalsky, East Meadow, both of N.Y., assignors to Knogo Corporation, Hicksville, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,440
Int. Cl.³ G08B *13/24*
U.S. Cl. 340—572 **31 Claims**

1. Apparatus for detecting, in an interrogation zone, an

article of merchandise on which is fastened a wafer containing a resonant electrical circuit, said apparatus comprising:

means for generating interrogation signals in the form of short pulses of electromagnetic field energy in said interrogation zone, said pulses being separated by intervals,



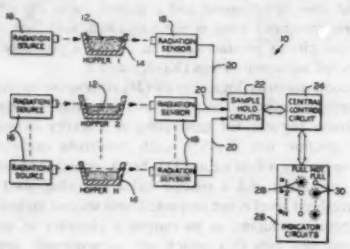
means for detecting electromagnetic energy in said interrogation zone during the interval following each pulse, and means for actuating an alarm in response to a predetermined amount of variation of electromagnetic energy detected during said intervals.

4,476,460

SELF-TEST CIRCUIT FOR MULTI-POINT LEVEL INDICATOR

James V. Motsinger, Austin, Tex., assignor to Ramsey Engineering Company, St. Paul, Minn.

Filed Mar. 27, 1981, Ser. No. 248,074
Int. Cl.³ G08B 29/00
U.S. Cl. 340—617 **10 Claims**



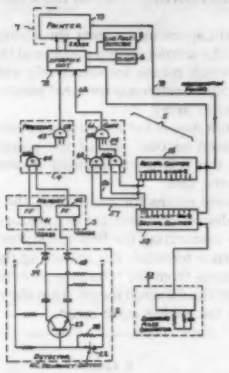
1. In an apparatus for monitoring the level of material in a hopper including a sensor means for generating a plurality of output signals representing the amount of the material at an associated level in the hopper, and means responsive to the rate of occurrence of the sensor output signals for generating an indication of the amount of the material in the hopper, means for testing the sensor means, comprising: a source of a maximum reference signal having a value representing the maximum value of the sensor output signals during normal operation; and means responsive to the sensor output signals and said maximum reference signal for generating a failure indication when the value of the sensor output signals exceeds the value of said maximum reference signal.

4,476,461

OCCUPANCY MONITOR

José C. Carubia, Rioja 2030, 2000 Rosario, Argentina

Continuation-in-part of Ser. No. 5,584, Jan. 22, 1979, abandoned. This application Aug. 3, 1981, Ser. No. 289,133
Claims priority, application Argentina, Jan. 24, 1978, 270832
Int. Cl.³ G08B 21/00
U.S. Cl. 340—667 **8 Claims**



1. An occupancy monitoring system for monitoring occupancy at a plurality of locations, comprising respective detector means at said locations for detecting occupancy occurrences including means generating occupancy detection signals at the respective locations, recording means to effect recording on a storage medium of detection signals for said location, transmitting means coupled between said detector means and said recording means for feeding the respective occupancy detection signals to said recording means to effect recording on said storage medium, clock means, means connecting said clock means to said transmitting means for recording the times of said detection signals on said storage medium concurrently with the occupancy signals, wherein each said occupancy signal generator means comprises a transistor provided with energizing circuit means including a base return circuit and occupancy switch means connected in said base return circuit, wherein said recording means is of a type providing identification pulses, means to verify the number of such identification pulses, and means to enable the recording means in accordance with such verification.

4,476,462

USE OF CONTEXT TO SIMPLIFY TWO-DIMENSIONAL COMPUTER INPUT

Alfred P. Feldman, Columbia, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Nov. 16, 1981, Ser. No. 321,689
Int. Cl.³ G09G 1/16
U.S. Cl. 340—711 **17 Claims**

1. A computer-operated method for minimizing the number of keyboard key strokes required at a data entry keyboard to display two-dimensional figures at a display controlled by said computer, which display is sub-divided into multiple two-dimensionally arrayed grid locations, said figures being made up of plural individual segments to be entered from said keyboard and displayed in individual display grid locations, some of said segments taking the form of alphanumeric characters having corresponding keys at said keyboard, others of said segments taking the form of directional symbols having forward and rearward ends and which, when displayed, link displayed alphanumeric characters and extend in respective

horizontal, vertical and diagonal directions on said display, said method comprising the steps of:

(a) entering into the computer digital signals representing individual figure segments actuated in succession at said keyboard;

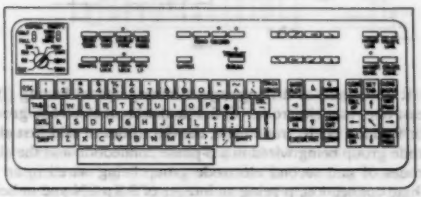
(b) storing within said computer a stored array of entered characters with locations corresponding to respective grid locations in said display;

(c) establishing a movable cursor grid location at said display;

(d) examining each segment entered into said computer to determine the form of the entered segment;

(e) in response to the entry of a display control character into said computer, effecting a corresponding display control function and moving the cursor grid location as prescribed by said corresponding control function;

(f) examining in said computer the contents of the present cursor grid location and



(1) in response to the presence of a blank in the present cursor grid location and to entry into said computer of a figure segment corresponding to an alphanumeric character to be displayed, displaying said character under computer control at the present cursor grid location;

(2) in response to the presence of a blank in the present cursor grid location and to entry into said computer of a component which corresponds to a directional symbol: automatically displaying a prescribed figure segment, other than the entered segment, at the present cursor grid location under control of the computer; moving the cursor grid location under computer control to a new grid location one space in the direction of the directional symbol represented by the entered figure segment; and displaying the directional symbol represented by the entered figure segment at the new cursor grid location.

4,476,463

DISPLAY DEVICE HAVING UNPATTERNED TOUCH DETECTION

Henry H. Ng, Chestnut Hill, Mass., and Béla R. Hatvany, London, England, assignors to Interaction Systems, Inc., Newtonville, Mass.

Filed Aug. 24, 1981, Ser. No. 295,495

Int. Cl.³ G09G 1/00

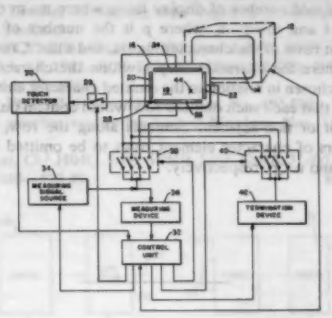
U.S. Cl. 340—712 **22 Claims**

1. In a touch-responsive display device having a faceplate, the improvement comprising

A. at least a first electrode disposed on the faceplate at a known relative location along at least a first direction,

B. an electrically-conductive coating on said faceplate connected in circuit with said coating and extending continuously therefrom along at least said first direction, said coating presenting to said first electrode an electrical impedance responsive to the relative location along said first direction of a capacitive touch of the faceplate, and

C. measuring means for applying an impedance-measuring signal of selected character to said electrode, and for responding to the response of said electrical impedance of said faceplate coating to said measuring signal for identifying the location along said first direction relative to said electrode of a capacitive touch of the faceplate.



4,476,464

ARRANGEMENT FOR REDUCING THE DISPLAY SIZE OF CHARACTERS STORED IN A CHARACTER STORE

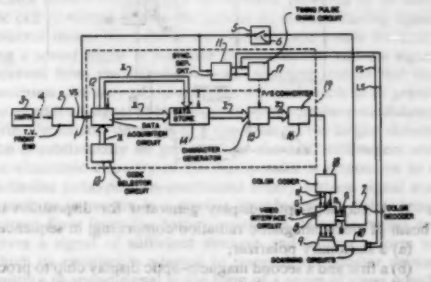
Donald S. Hobbs, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1982, Ser. No. 359,640

Claims priority, application United Kingdom, Apr. 10, 1981, 8111380

Int. Cl.³ G09G 1/22

U.S. Cl. 340—731 **7 Claims**



1. A character generator arrangement for use in a character display system for producing character generating data for causing the display of characters by the system; which arrangement comprises a character store in which is stored information pertaining to characters which conform to a format contained within a co-ordinate matrix of discrete character elements arranged in rows and columns, input addressing means for addressing the character store with input data for a character selected for display, row selection means for producing row addresses each of which is for selecting, for a read-out operation from the character store, the information pertaining to a particular character element row of the matrix, and data output means for producing in said read-out operation character generating data for the character element(s) in the selected character element row of the selected character; characterized in that said arrangement further comprises logic control means for controlling the row selection means in its row selection, in respect of each of a plurality of characters to be displayed as a row of characters on a number of display lines, such that the output means produces character generating data for m successive element rows of the character to be displayed on m alternate display lines of said number of display lines, and character

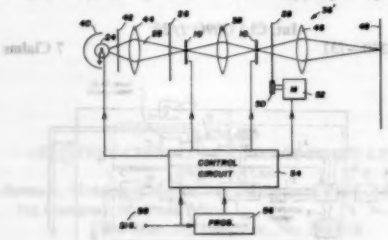
generating data for n successive character element rows of the character to be displayed on n adjacently intervening display lines of said number of display lines, where $n=m$ or $(m\pm1)$, $n=p-t$ and $m=p-s$, where p is the number of character element rows of the character matrix, and s and t, respectively and where the character shapes within the character format are so chosen in relation to the omitted character element rows s and t that each such omitted row would contain only a single element or non-adjacent elements along the row, represent numbers of character element rows to be omitted by which $m<p$ and $n<p$, respectively.

4,476,465

MAGNETO-OPTIC DISPLAY GENERATOR

Robert H. Anderson, Long Beach, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 30, 1982, Ser. No. 412,878
Int. Cl.³ G09G 3/20
U.S. Cl. 340—783 **13 Claims**



1. A magneto-optic display generator for disposition in a beam of electromagnetic radiation comprising, in sequence:

(a) a stationary polarizer;

(b) a first and a second magneto-optic display chip to process information provided from a first and second source respectively;

(c) a rotatable polarization analyzer;

(d) means to rotate said polarization analyzer relative to said polarizer; and

(e) control means operably connected to said first chip, second chip, and rotating means both to drive and rotate said chips and rotating means, respectively; said control means including:

(1) means to align the polarization axis orientation of said polarization analyzer relative to the polarization axis of said polarizer to result in selected classes of image area portions relative to said polarization analyzer axis being within a range of relative orientations bounded at each end by the occurrence of substantially equal brightness of at least any two selected classes of said image area portions,

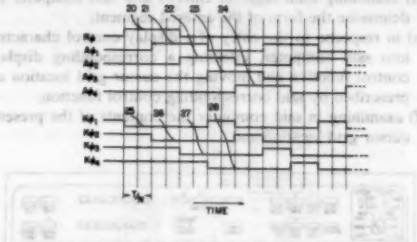
so that a predetermined hierarchal order of brightness of said image portions is obtained throughout said range of relative axis orientations whereby any common boundary and any brightness difference between said image area portions is substantially eliminated, and information not explicity present in said first and second display chip thereby extracted.

4,476,466

DRIVING METHOD OF GAS-DISCHARGE DISPLAY PANEL

Eisuke Mitani, Tokorozawa; Yukio Okamoto, Sagamihara, and Atsushi Sumioka, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,472
Claims priority, application Japan, May 9, 1980, 55-60611
Int. Cl.³ G09G 3/10
U.S. Cl. 340—805 **11 Claims**



1. A method of driving a gas-discharge panel having (i) at least one reset electrode, (ii) first and second electrode groups for forming N electrode pairs, the electrodes of said first electrode group being wired in a p-phase connection and the electrodes of said second electrode group being wired in an m-phase connection, p being an integer of $3\leqq p\leqq N$ and m being a positive integer not greater then p, and (iii) current limiting resistor means connected to one of said first and second electrode groups, comprising the steps of:

(a) applying at least one reset pulse voltage having a maximum pulse width of $(m-1)T/N$ to said reset electrode at the beginning of each frame of period T, the reset pulse voltage having a predetermined value with respect to a reference value;

(b) successively applying cathode pulse voltages with their pulse widths of $(p-1)T/N$ to the respective p-phase electrode connections of said first electrode group with a phase shift of T/N to each other, the cathode pulse voltages having a value smaller than the reference value; and

(c) successively applying anode pulse voltages with their maximum pulse width of $(m-1)T/N$ to the respective m-phase electrode connections of said second electrode group with a phase shift of T/N to each other, the anode pulse voltages having a value larger than the reference value, said anode and cathode pulse voltage values differing from said reference value sufficiently to support discharge,

whereby a reset discharge generated by said reset pulse voltage and the first one of said cathode and anode pulse voltages applied for each frame is successively transferred by means of said cathode and anode pulse voltages to display desired information.

4,476,467

RANDOM ENTRY INTERCOMPUTER NETWORK WITH COLLISION PREVENTION

Curtis G. Terwilliger, Burlingame; W. James McKeefery, Los Alto Hills; Szu C. Sun, Sunnyvale, and Roger D. Melen, Mountain View, all of Calif., assignors to Cromemco Inc., Calif.

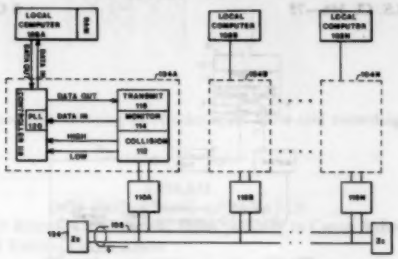
Filed Jun. 8, 1982, Ser. No. 386,274
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.5 **31 Claims**

1. A local interface circuit having a high impedance monitoring mode and a low impedance transmit mode, and adapted to be connected between a local computer and a plurality of remote monitor-transmit interface circuits and computers through an inter-computer data transfer system which changes

in impedance as the monitor-transmit status of the remote interface circuits change, the interface circuit comprising:

high impedance monitoring means for monitoring electrical signals in the data transfer system during the monitor mode;

low impedance transmission means for providing transmission power to drive the data transfer system during the



transmit mode for transmission of data-out signals from the local computer; and

a collision detection circuit responsive to the level of the transmission drive power required to transmit the data-out signals during the transmit mode for detecting changes in the impedance of the data transfer system and aborting the transmit mode and resetting the monitor mode.

4,476,468

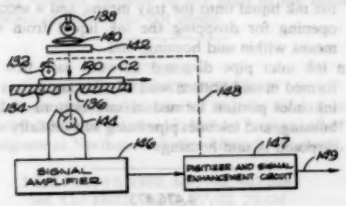
SECURE TRANSACTION CARD AND VERIFICATION SYSTEM

Robert N. Goldman, Kailua, Hi., assignor to Light Signatures, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 276,282, Jun. 22, 1981, Pat. No. 4,423,415. This application Jun. 10, 1983, Ser. No. 503,392

Int. Cl.³ H04Q *9/00*; G06K *7/10*

U.S. Cl. 340—825.034 **18 Claims**



1. An authenticator device for machine sensing, as for use by a subject to indicate the prudence of a transaction in the subject's interest, comprising:

a card in a sheet form and including a medium in at least a certain area thereof for altering an orientation-frequency property of light in a random variable pattern and accordingly to modulate the orientation-frequency property of a beam of light as said beam scans a path on said predetermined area of said medium; and

a machine-readable record on said card indicative of said random variable pattern of said medium over said path on said predetermined area.

4,476,469

MEANS FOR ASSISTING IN LOCATING AN OBJECT

David R. Lander, 17 Stirling Rd., Drymen, by Glasgow G63 OBW, Scotland

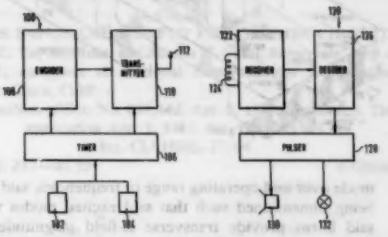
PCT No. PCT/GB81/00243, § 371 Date Jul. 13, 1982, § 102(e) Date Jul. 13, 1982, PCT Pub. No. WO82/01780, PCT Pub. Date May 27, 1982

PCT Filed Nov. 13, 1981, Ser. No. 403,510

Claims priority, application United Kingdom, Nov. 14, 1980, 8036587

Int. Cl.³ H04Q *9/00*; H04B *5/04*; G08B *21/00*

U.S. Cl. 340—825.49 **8 Claims**



1. Locator means for assisting in locating an object, said means comprising a transmitter-transponder system which comprises a hand-held searcher device comprising a short-range signal transmitter powered by an electric cell or battery in the device and having electronic circuitry for generating an address signal to be emitted on activation of the transmitter by switching means incorporated in the searcher device, and a locator device comprising a transponder powered by an electric cell or battery within the locator device and having signal detector means with electronic circuitry and means for emitting a sound signal in response to a particular address signal received from the searcher device, characterized in that the electronic circuitry of the searcher device is such as to generate an address signal of binary-coded pulse-position-modulated form, the locator device is of a size wherein the largest dimension is substantially no greater than about 50 millimeters and the electronic circuitry of the transponder is responsive to a particular pulse-position-modulated binary address signal and is such as to remain in a passive listening mode, minimizing current flow from the battery, until the detector means receives a signal of sufficient strength and having a form to which its circuitry is adapted to respond, the locator device emitting its sound signal in the form of a series of tones which is determined by the form of the address signal to which it is responsive, thereby identifying the locator device to someone using the searcher device, and the transponder circuitry is such as to cause emission of the sound signal after receipt of the address signal so that the locator signal can be heard after the transmitted signal has ceased.

4,476,470

THREE HORN E-PLANE MONOPULSE FEED

David F. Bowman, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1982, Ser. No. 421,518

Int. Cl.³ H01Q *25/02, 25/04*

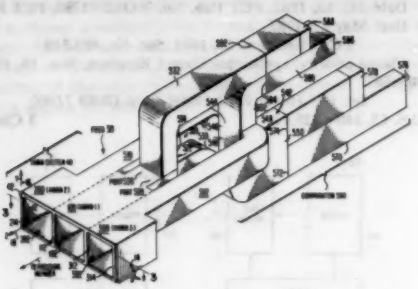
U.S. Cl. 343—778 **10 Claims**

1. A radio frequency feed for operation over an operating range of radio frequencies, comprising:

a horn system including first, second and third rectangular horns each dimensioned for supporting the fundamental transverse electric mode and a higher order anti-symmetric mode over said operating range of frequencies, each horn having a radiation aperture, said radiation apertures of said horns positioned to form a composite radiation aperture, said horns being positioned along a line so that

the E-fields of said fundamental modes in said horns are aligned collinearly; and

means for exciting said first, second and third horns in said fundamental mode and said higher order anti-symmetric



mode over said operating range of frequencies, said horns being dimensioned such that said excited modes within said horns provide transverse E-field magnitudes and phases which are substantially continuous across the transitions between the radiation apertures of adjacent horns.

4,476,471

ANTENNA APPARATUS INCLUDING FREQUENCY SEPARATOR HAVING WIDE BAND TRANSMISSION OR REFLECTION CHARACTERISTICS

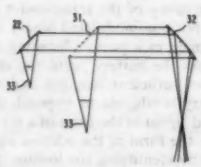
Ikuro Sato; Susumu Tamagawa, and Ryuichi Iwata, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 346,818

Claims priority, application Japan, Feb. 9, 1981, 56-17831; Feb. 10, 1981, 56-18711

Int. Cl.³ H01Q *19/00*

U.S. Cl. 343—779 **20 Claims**



1. A frequency separator means for use in an antenna apparatus, said means comprising,

a plurality of frequency-selective reflecting surface members for separating electromagnetic waves,

each of said surface members composed of a lattice of conductive material having a periodic pattern, said lattice exhibiting the effect of an inductive-capacitive circuit element in a first relatively low frequency region and having an inherent resonance frequency at a frequency higher than said first region, said lattice being shaped to exhibit substantially equal inductance and capacitance with respect to obliquely incident TE and TM mode electromagnetic waves at said inherent resonance frequency and said first region,

all of said surface members having substantially equal inherent resonance frequencies, and

said surface members being disposed to have interactive resonance at frequencies within said first region.

4,476,472

BUBBLE REMOVAL IN AN INK LIQUID SUPPLY SYSTEM OF AN INK JET SYSTEM PRINTER

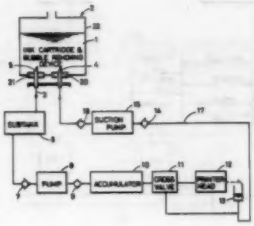
Masahiko Aiba, Nara, and Naohiro Oku, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1983, Ser. No. 512,639

Claims priority, application Japan, Jul. 31, 1982, 57-134010

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **5 Claims**



1. An ink liquid supply system for an ink jet system printer of the charge amplitude controlling type comprising:

an ink liquid reservoir for containing ink liquid therein;

a supply pump means for supplying the ink liquid from said ink liquid reservoir to a printer head;

a beam gutter for collecting ink droplets emitted from said printer head but not contributing to the actual printing operation; and

a combined ink cartridge/bubble removing device connected to receive ink liquid from said beam gutter and to channel ink liquid to said ink liquid reservoir, said combined ink cartridge/bubble removing device including:

a housing having a bottom wall which is provided with an ink inlet portion communicated to said beam gutter for introducing the ink liquid from said beam gutter into the combined ink cartridge/bubble removing device, and an ink outlet portion communicated to said ink liquid reservoir for supplying the ink liquid from the combined ink cartridge/bubble removing device to said ink liquid reservoir;

tray means disposed in said housing near the middle height in said housing, said tray means having a bottom wall which is provided with a first opening for introducing the ink liquid onto the tray means, and a second small opening for dropping the ink liquid from said tray means within said housing; and

an ink inlet pipe disposed between said first opening formed in said bottom wall of said tray means and said ink inlet portion formed in said bottom wall of said housing, said ink inlet pipe being substantially vertically disposed in said housing.

4,476,473

ELECTROSTATIC RECORD IMAGE FORMING METHOD

Shoji Wako, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,567

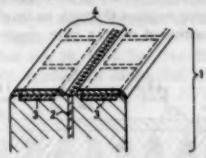
Claims priority, application Japan, Jan. 27, 1981, 56-10644

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—155 **11 Claims**

1. A multi-stylus electrode assembly for use in electrostatic recording, said assembly including a body having a face to be directed toward a recording paper, a plurality of charging electrodes arranged in a line along said face and a plurality of auxiliary electrodes disposed on either side of said charging electrodes, the improvement comprising an insulating material

covering said auxiliary electrodes which provides a gap holding and insulating function wherein said insulating material



maintains said charging electrodes apart from said recording paper.

4,476,474

DOT RECORDING APPARATUS

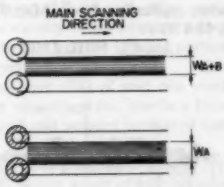
Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,687

Claims priority, application Japan, Apr. 2, 1981, 56-50362; Apr. 20, 1981, 56-60451

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—160 **12 Claims**



5. A dot recording apparatus for recording a dot image, comprising:

a dot forming member on which dots may be recorded to form the dot image;

dot forming means for forming one of a first dot and a second dot which is different in size from the first dot on said dot forming member; and

selecting means for selectively causing said dot forming means to form one of the first dot and the second dot on said dot forming member on the basis of the degree of separation of dots in the dot image.

4,476,475

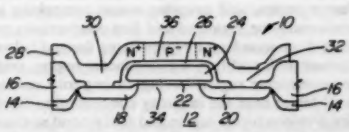
STACKED MOS TRANSISTOR

Abdalla A. Naem, Ottawa; Hussein M. Naguib, Kanata; Iain D. Calder, and Albert R. Boothroyd, both of Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 19, 1982, Ser. No. 442,864

Int. Cl.³ H01L *29/78, 27/02, 29/04*

U.S. Cl. 357—23.7 **5 Claims**



1. A transistor having first and second semiconductor layers separated by an insulated gate, the layers contacting one another at a first region laterally adjacent the insulated gate, at which first region both of the semiconductor layers are doped to form a source region, the layers contacting one another at a second region laterally adjacent the insulated gate at a position remote from the first region, at which second region both of the semiconductor layers are doped to form a drain region, the transistor having a first channel region extending between the source region and the drain region in the first semiconductor layer below the insulated gate, and a second channel region extending between the source region and the drain region in the second semiconductor layer above the insulated gate.

4,476,476

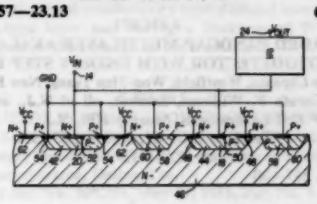
CMOS INPUT AND OUTPUT PROTECTION CIRCUIT

James C. Yu, San Jose, and Suman H. Patel, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 027,442, Apr. 5, 1979, abandoned. This application Apr. 1, 1981, Ser. No. 249,934

Int. Cl.³ H01L *27/04*

U.S. Cl. 357—23.13 **6 Claims**



1. A protective circuit for a CMOS integrated circuit having an input terminal, a first power supply terminal which is adapted to be connected to a source of first power supply potential, and a second power supply terminal which is adapted to be connected to a source of second power supply potential, said protective circuit comprising:

(a) a body of semiconductor material of a first conductivity type forming a substrate;

(b) a first diode having an anode coupled to the circuit input terminal and a cathode coupled to the first power supply terminal, said first diode comprising:

(1) a first region extending into said substrate, said first region being of a second conductivity type opposite to said first conductivity type; and

(2) a second region extending into said first region, said second region being of the first conductivity type, but having a higher degree of conductivity than said substrate;

(c) a second diode having a cathode coupled to the circuit input terminal and an anode coupled to the second power supply terminal, said second diode comprising:

(1) a third region extending into said substrate, said third region being of the second conductivity type; and

(2) a fourth region extending into said third region, said fourth region being of the first conductivity type, but having a higher degree of conductivity than said substrate;

(d) a first transistor coupled to the first diode and to the first power supply terminal, said first transistor being biased into conduction upon the application of a potential to the circuit input terminal which is sufficient to forward bias the first diode, the biasing of the first transistor into conduction and the forward biasing of the first diode causing current to flow from the circuit input terminal, said first transistor comprising:

(1) an emitter region which includes said first region;

(2) a base region which includes said substrate; and

(3) a collector region which includes a fifth region of the second conductivity type extending into the substrate,

said fifth region having a ring-like configuration which surrounds said first region; and

(e) a second transistor coupled to the second diode and to the second power supply terminal, said second transistor being biased into conduction upon the application of a potential to the circuit input terminal which is sufficient to forward bias the second diode, the biasing of the second transistor into conduction and the foward biasing of the second diode causing current to flow from the seond power supply terminal, through the second diode and through the second transistor to the circuit input terminal, said second transistor comprising:

(1) an emitter region which includes said fourth region;

(2) a base region which includes said third region; and

(3) a collector region which includes said substrate and a sixth region of the first conductivity type extending into said substrate to provide an ohmic contact thereto, said sixth region having a higher degree of conductivity than said substrate and having a ring-like configuration which surrounds said third region.

4,476,477

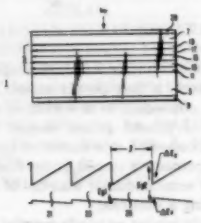
GRADED BANDGAP MULTILAYER AVALANCHE PHOTODETECTOR WITH ENERGY STEP BACKS

Federico Capasso, Westfield; Won-Tien Tsang, New Providence, and Gareth F. Williams, Summit, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 23, 1982, Ser. No. 351,511

Int. Cl.³ H01L *37/14*

U.S. Cl. 357—30 **18 Claims**



1. An avalanche photodetector comprising a first layer having a first conductivity type, a second layer having a second conductivity type, and disposed intermediate said first layer and said second layer at least one compositionally varying layer having a composition varying from a low bandgap composition to a high bandgap composition, said compositionally varying layer having an energy band step back after said high bandgap that assists ionization of one type of carrier.

4,476,478

SEMICONDUCTOR READ ONLY MEMORY AND METHOD OF MAKING THE SAME

Hideo Noguchi, Yokohama; Tugunari Iwamoto, Tokyo, and Sakae Takei, Ebina, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 19, 1981, Ser. No. 245,544

Claims priority, application Japan, Apr. 24, 1980, 55-054552; May 6, 1980, 55-59708

Int. Cl.³ H01L *29/78, 27/02, 29/04*

U.S. Cl. 357—41 **5 Claims**

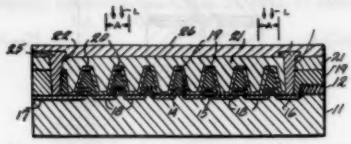
1. A semiconductor read only memory comprising:

(a) a semiconductor substrate of a first conductivity type;

(b) a plurality of regions of a second conductivity type, opposite to said first conductivity type formed in the semiconductor substrate;

(c) a plurality of gate electrodes bridging two adjacent second conductivity type regions through insulating layers, said second conductivity type regions, gate electrodes and insulating layers forming series connected MOS transistors; and

(d) silicon resistances connected between adjacent second conductivity type regions through an insulating layer and each being positioned over a gate electrode of a MOS transistor,



(e) a passivation film formed over all the semiconductor substrate, and wherein said silicon resistances being selectively activatable by laser beam irradiation so as to decrease the resistance thereof.

4,476,479

SEMICONDUCTOR DEVICE WITH OPERATING VOLTAGE COUPLING REGION

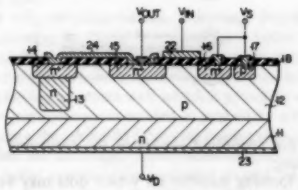
Shozo Saito, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 24, 1981, Ser. No. 247,156

Claims priority, application Japan, Mar. 31, 1980, 55-40209; Dec. 19, 1980, 55-178941

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—42 **19 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type having first and second opposite surfaces;

a semiconductor layer of a second conductivity type opposite to said first conductivity type, said semiconductor layer formed on said first surface of said substrate;

a plurality of semiconductor regions spaced apart from one another in a surface of said semiconductor layer to form an active device, said plurality of semiconductor regions including a first semiconductor region of said first conductivity type to which an operating voltage must be coupled to power said active device;

a power source voltage terminal coupled to said second surface of said substrate for receiving said operating voltage; and

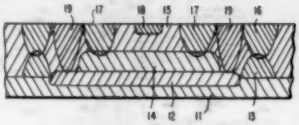
coupling means for coupling said operating voltage from said power source voltage terminal to said first semiconductor region, said coupling means comprising a second semiconductor region of said first conductivity type, said second semiconductor region being formed below and in contact with said first semiconductor region, said second semiconductor region having an impurity concentration level lower than the impurity concentration level of said first semiconductor region and said second semiconductor region being formed sufficiently deep into said semiconductor layer wherein said operating voltage applied to said terminal is supplied to said first semiconductor region through said substrate, said semiconductor layer, and said second semiconductor region to power said active device.

4,476,480

HIGH WITHSTAND VOLTAGE STRUCTURE OF A SEMICONDUCTOR INTEGRATED CIRCUIT

Mamoru Fuse, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,450
Claims priority, application Japan, Jul. 30, 1980, 55-104514
Int. Cl.³ H01L 27/02, 27/04
U.S. Cl. 357—44 7 Claims



1. A semiconductor device comprising:
a semiconductor substrate (11) of one conductivity type;
a semiconductor layer (15) of the other conductivity type;
an isolation region (13, 16) of said one conductivity type formed as a closed-loop to isolate a portion of said semiconductor layer from other portions of said semiconductor layer, said isolation region penetrating said semiconductor layer to reach said semiconductor substrate;
a first buried layer (12) of said other conductivity type formed in the vicinity of the interface between said semiconductor substrate and the isolated portion of said semiconductor layer;
a second buried layer (14) of said one conductivity type formed in the vicinity of the interface between said first buried layer and said isolated portion of said semiconductor layer;
a first region (17) of said one conductivity type formed as a closed-loop to isolate a part of said isolated portion from other parts of said isolated portion, said first region extending from the outer surface of said isolated portion to the interface between said isolated portion and said second buried region;
a second region (19) of said other conductivity type formed in said isolated portion between said isolation region and said first region, said second region extending from the outer surface of said isolated portion to said first buried region, having an upper portion overlapped with said isolation region and said first region and having an impurity concentration higher than the impurity concentration of said semiconductor layer.

4,476,481

LOW-LOSS P-I-N DIODE

Susumu Iesaka, Tokyo, and Shigenori Yakushiji, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 3, 1982, Ser. No. 384,649
Claims priority, application Japan, Aug. 31, 1981, 56-136773
Int. Cl.³ H01L 29/12
U.S. Cl. 357—58 5 Claims

1. A P-i-n diode comprising:
a semiconductor substrate of a first conductivity type which functions as the anode of the P-i-n diode;
a first i-type layer of said first conductivity type formed on said semiconductor substrate and having a first thickness W_1;
a second i-type layer of said first conductivity type formed on the first i-type layer and having a second thickness of W_2;
said second i-type layer having an impurity concentration lower than that of said first i-type layer;
carrier lifetime killer characterized by a small carrier compensation effect being diffused into said first and second i-type layers whereby said first and second i-type layers have a carrier lifetime of τ; and

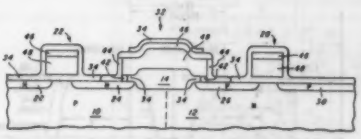
a region of second conductivity type diffused into said second i-type layer and having a thickness of W_3 which functions as the cathode of the P-i-n diode.

4,476,482

SILICIDE CONTACTS FOR CMOS DEVICES

David B. Scott, Plano; Roderick D. Davies, Richardson, and Yee-Chaung See, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 268,201, May 29, 1981, Pat. No. 4,374,700.
This application May 13, 1982, Ser. No. 377,759
Int. Cl.³ H01L 23/48, 29/04, 29/46, 29/78
U.S. Cl. 357—71 8 Claims



1. An integrated circuit buried contact structure comprising:
a silicon substrate;
a thin insulator layer, said thin insulator layer exposing contact regions of said substrate;
a layer of gate-level polysilicon on said insulator layer, said polysilicon including respective portions adjacent to said respective contact regions of said substrate;
said insulator layer defining a recess beneath said polysilicon adjacent to said contact area of said substrate, said recess containing a material comprising high-resistivity polysilicon; and
a metal silicide layer which is in contact both with said contact area of said substrate and with said gate-level polysilicon and is continuous therebetween.

4,476,483

SEMICONDUCTOR DEVICE HAVING A DOPED AMORPHOUS SILICON ADHESIVE LAYER

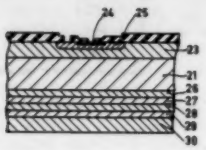
Everhardus P. G. T. van de Ven, Sunnyvale, Calif., and Antonius J. M. Uijen, Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 9, 1981, Ser. No. 281,760
Claims priority, application Netherlands, Jul. 18, 1980, 8004139
Int. Cl.³ H01L 23/48
U.S. Cl. 357—71 5 Claims

1. A semiconductor device having a monocrystalline semiconductor body with first and second oppositely-located major surfaces, which comprises:

at least one circuit element formed in said first major surface;

a doped amorphous silicon adhesive layer on said second major surface and of the same conductivity type at that of said monocrystalline semiconductor body at said second major surface;



at least one metal layer on said doped amorphous silicon adhesive layer; and

a carrier bonded to the outermost of said metal layer(s) on the doped amorphous silicon adhesive layer.

4,476,484

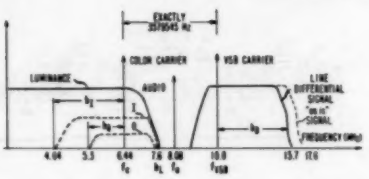
TECHNIQUE FOR PROVIDING COMPATIBILITY BETWEEN HIGH-DEFINITION AND CONVENTIONAL COLOR TELEVISION

Barin G. Haskell, Tinton Falls, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 24, 1982, Ser. No. 391,973

Int. Cl.³ H04N 9/42

U.S. Cl. 358—11 **18 Claims**



1. An arrangement for generating a compatible high-definition television (CHDTV) color picture signal including a predetermined bandwidth and format, the arrangement comprising:

means, responsive to a HDTV composite color picture signal as generated by HDTV camera color tubes at a first line scan rate, for stretching each of at least a first and a second sequential line signal of the HDTV composite color picture signal in time by a factor which is a predetermined submultiple of the first line scan rate to generate respective line signals which are at the same line scan rate as that of an associated conventional television system picture signal;

means, responsive to the at least first and second time stretched line signals from the time stretching means, for transmitting the first stretched line signal as is in a first portion of the predetermined bandwidth of the CHDTV color picture signal and, concurrent therewith, for transmitting the second stretched line signal either one of as is or as a line differential signal in a second portion of the predetermined bandwidth of the CHDTV color picture signal on a vestigial sideband carrier signal which is separated from a color subcarrier of the first line signal by a frequency which is substantially equal to that of a baseband color subcarrier frequency of the associated conventional television system color picture signal.

4,476,485

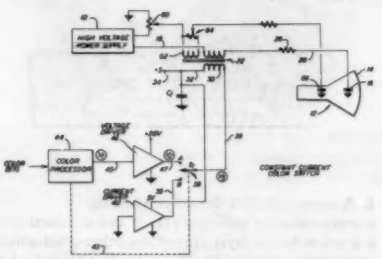
CONSTANT CURRENT BIAS COLOR SWITCH FOR A BEAM PENETRATION CRT

Michael H. Kalmanash, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 1, 1981, Ser. No. 259,394

Int. Cl.³ H04N 9/27; H01J 25/80

U.S. Cl. 358—73 **7 Claims**



1. A high voltage color switch for a beam penetration cathode-ray tube for displaying a baseline color in a first color write period and at least one secondary color in a first color write period and at least one secondary color in a second color write period, comprising:

high voltage power supply means connectable to said cathode-ray tube to provide a baseline color when applied to said cathode-ray tube during said first color write period;

transformer means connectable between the output of said high voltage power supply and said beam penetration cathode-ray tube;

current means for providing a bias current to said transformer during said first color write period;

voltage means for providing a voltage waveform with a suitable swing to said transformer for changing the voltage level to said beam penetration cathode-ray tube to one or more secondary colors during said second color write period;

switch means for alternatively connecting said voltage means and said current means to said transformer during said second color write period and said first color write period, respectively; and

whereby said current means provides a bias current to said transformer during said first color write period to drive the flux level in the core of said transformer to one end of its dynamic range, and said voltage means provides a suitable waveform to said transformer during said second color write period to switch the color displayed by said beam penetration cathode-ray tube to said at least one secondary color.

4,476,486

IMAGE RECORDING SYSTEM UTILIZING A PLURALITY OF RECORDING UNITS

Naoki Ayata, Machida; Noboru Koumura, Narashino; Seiji Saito, Yokosuka; Hidetoshi Suzuki, Tokyo; Kunitaka Ozawa, Tokyo, and Koji Kazuma, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,240

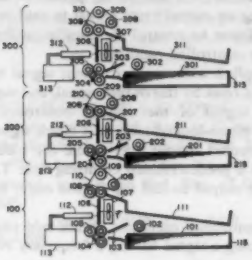
Claims priority, application Japan, Dec. 16, 1980, 55-177654; Dec. 16, 1980, 55-177655; Dec. 16, 1980, 55-177656; Dec. 16, 1980, 55-177657; Dec. 16, 1980, 55-177658; Dec. 16, 1980, 55-177659; Dec. 23, 1980, 55-183128; Dec. 27, 1980, 55-186525; Dec. 27, 1980, 55-186526

Int. Cl.³ H04N 1/22

U.S. Cl. 358—78 **40 Claims**

1. An image recording system comprising:

a plurality of recording units for recording on a plurality of recording media;
means for setting a recording number; and



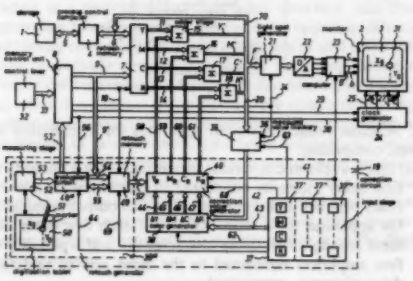
means for selecting at least one of said recording units to be used for recording, accodding to the recording number set by said recording number setting means.

4,476,487

METHOD AND CIRCUIT ARRANGEMENT FOR PARTIAL ELECTRONIC RETOUCH IN COLOR IMAGE REPRODUCTION

Jürgen Klie, Toekendorf, and Klaus Wellendorf, Kitzeberg, both of Fed. Rep. of Germany, assignors to Dr. -Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

PCT No. PCT/DE80/00134, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982, PCT Pub. No. WO82/00903, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 10, 1980, Ser. No. 380,663
Int. Cl.³ G03F *3/08*; H04N *1/46*
U.S. Cl. 358—80 **14 Claims**



1. The method for partial electronic retouching of color images, in which color signals obtained by point-by-point and trichromatic scanning of color originals are digitaized and the digital color values of the individual color separations are stored in a storage medium, and in which the stored color values are corrected by color correction values, so as to obtain retouched color images, comprising the steps of:

(a) defining color increment values (ΔY, ΔM, ΔC, ΔK) for said individual color separations, said color increment values representing the smallest amount of correction for said color values (Y, M, C, K) per retouching step,

(b) generating simultaneously the locus-coordinates of a plurality of image points to be retouched by means of a corrdinate identification device with a marking means, such as a coordinate pen, said plurality of image points representing a correction area displaceable on the color image by said marking means,

(c) during coordinate identification generating a retouch factor (r) for each image point within the correction area with said marking means, guiding said marking means similar to a retouch brush over that part of the color image to be retouched, said correction area representing the surface of said retouch brush, said retouch factors (r) representing the number of the desired retouching steps,

(d) defining a freely selectable weighting factor (w) for each point of the correction area, said weighting factors (2) specifying the desired degree of retouching for said color values (Y, M, C, K) per retouching step as a multiple of the color increment values (ΔY, ΔM, ΔC, ΔK),

(e) generating correction values (Y_R, M_R, C_R, K_R) for each image point to be retouched in the color image by multiplying the color increment values (ΔY, ΔM, ΔC, ΔK) with the corresponding retouch factors (r) and weighting factors (w); and

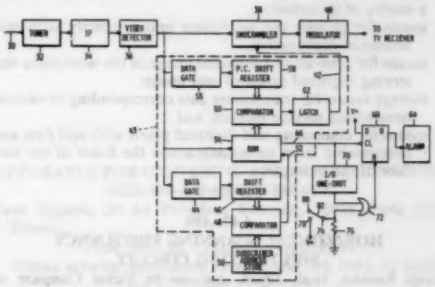
(f) correcting said color values (Y, M, C, K) of the images points to be retouched by adding (positive retouching) or by subtracting (negative retouching) said corresponding correction values (Y_R, M_R, C_R, K_R) in order to obtain retouched color values (Y', M', C', K').

4,476,488

CONTROL CIRCUIT FOR CATV ALERT SYSTEM

Richard G. Merrell, Hebron, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 23, 1983, Ser. No. 478,607
Int. Cl.³ H04N *7/16*; H04B *1/16*
U.S. Cl. 358—86 **7 Claims**



1. A circuit for controlling the operation of a cable television alarm device in accordance with an alert signal and an all-clear signal developed by subscriber apparatus in response to broadcast data received over the cable television network, comprising:

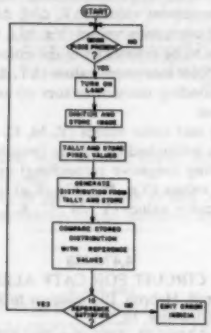
bi-stable means having a first input responsive to the alert signal for assuming a first state for activating the alarm device and a second input responsive to the all-clear signal for assuming a second complementary state for de-activating the alarm device; and

manually operable single-pole switch means coupled to the second input of the bi-stable means, said switch means being displaceable between a first position for coupling a first reference potential to the second input of the bi-stable means for enabling the bi-stable means to assume its first or second state in response to an alert or an all-clear signal respectively and a second position for coupling a second reference potential to the second input of the bi-stable means for causing the bi-stable means to assume and maintain its second state, said switch means being further operable for momentary displacement to its second position for coupling the second reference potential to the second input of the bi-stable means for causing the bi-stable means to assume its second state, whereby the switch means is manually displaceable between two switching positions for enabling, disabling and clearing the alarm device.

4,476,489
MICROFINISH MEASUREMENT APPARATUS AND TECHNIQUE

Gary P. Weltlich, Massillon, and Gary G. Wagner, Akron, both of Ohio, assignors to Inspection Technology, Inc., Akron, Ohio

Filed May 20, 1982, Ser. No. 380,090
Int. Cl.³ H04N 7/18
U.S. Cl. 358—107 10 Claims

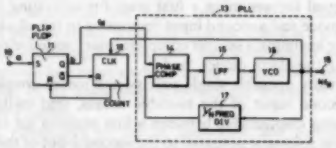


1. Apparatus for determining the finish of the surface of a workpiece, comprising:
- a source of illumination;
- means for passing the workpiece into proximity with said source of illumination;
- means for generating a digitized image of the workpiece and storing digitized pixels of said image;
- storage means for maintaining data corresponding to various preselected surface finishes; and
- means for comparing said digitized pixels with said data and determining from such comparison the finish of the surface of the workpiece.

4,476,490
HORIZONTAL SCANNING FREQUENCY MULTIPLYING CIRCUIT

Kenji Kaneko, Iwai, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 17, 1982, Ser. No. 359,017
Claims priority, application Japan, Mar. 20, 1981, 56-40553
Int. Cl.³ H04N 5/04
U.S. Cl. 358—148 5 Claims



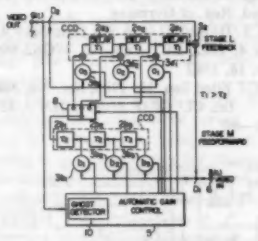
1. A horizontal scanning frequency multiplying circuit comprising:
- a flip-flop supplied with a horizontal synchronizing signal having a horizontal scanning frequency f_H, which is set by this horizontal synchronizing signal;
- a phase-locked-loop comprising a voltage controlled oscillator for producing a signal having a frequency Nf_H (N is an integer over 1) which is N times the horizontal scanning frequency f_H, a frequency divider for frequency-dividing an output signal frequency of said voltage controlled oscillator, and a phase comparator supplied with one output signal of said flip-flop and an output signal of said frequency divider, for comparing phases of these signals and applying an output error signal to said voltage controlled oscillator to control the oscillation frequency of said voltage controlled oscillator; and
- a counter supplied with another output signal of said flip-flop which is reset by this output signal, and supplied with the output signal of the voltage controlled oscillator within said phase-locked-loop as a clock signal, for producing a counted output every time the clock signal is counted for a predetermined counting time T, to supply this counted output to said flip-flop in order to reset said flip-flop,

said voltage controlled oscillator within said phase-locked-loop producing a signal having a frequency Nf_H.

4,476,491
GHOST REDUCTION CIRCUIT FOR TELEVISION RECEIVER

Toshinori Murata; Tomomitsu Kuroyanagi, and Masafumi Kazumi, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,565
Claims priority, application Japan, Aug. 11, 1981, 56-124672
Int. Cl.³ H04N 5/21; H04B 3/04
U.S. Cl. 358—167 16 Claims



1. A ghost reduction circuit apparatus for a television receiver, comprising:
- (a) first waveform conversion means including a plurality of first delay elements connected in cascade with one another between an input terminal and an output terminal of the apparatus for a video signal and each first delay element having a first delay characteristic and a plurality of first amplifiers connected to the input side of said first delay elements, respectively;
- (b) second waveform conversion means including a plurality of second delay elements connected in cascade with one another and each second delay element having a second delay characteristic and a plurality of second amplifiers connected to the input side of said second delay elements, respectively;
- (c) coupling means for coupling the final end of said second waveform conversion means to one of said first delay elements of said first waveform conversion means;
- (d) ghost detecting means for detecting ghost signal components contained in said video signal;
- (e) automatic gain control means for controlling the gains of said first and second amplifiers on the basis of the result of the ghost detection effected by said detecting means so that a major portion of said ghost signal components is eliminated by said first waveform conversion means while the residual ghost signal components are eliminated by said second waveform conversion means; and
- (f) wherein said first and second amplifiers have inputs con-

nected to said output terminal and said input terminal for the video signal, respectively, and having outputs connected to input terminals of the associated delay elements, respectively, said coupling means coupling the output of the final one of said second cascaded delay elements to the input of selected one of said first delay elements under the control of said automatic gain control means.

4,476,492

DEVICE FOR LINEARLY GUIDING A SCANNER

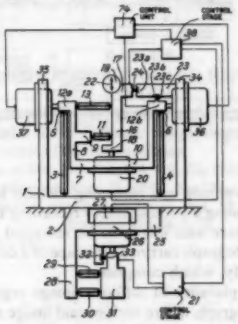
Karl-Heinz Muth, Lollar, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Aug. 12, 1982, Ser. No. 407,487

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135180

Int. Cl.³ H04N *3/02, 3/08*

U.S. Cl. 358—208 **13 Claims**



1. A device for linearly guiding a scanner along a path extending in a predetermined coordinate direction, said device comprising two drive means operating in opposing directions and rigidly connected with each other; one of said drive means being operatively connected to impart oscillating motion to a scanner carrier suspended on springs and bearing said scanner, the other drive means being operatively connected to impart oscillating motion to a counterweight suspended on springs, the weight of said counterweight being substantially equal to the weight of said scanner carrier plus said scanner; said device further comprising control means for actuating said drive means so that the oscillating movements of said scanner carrier and of said counterweight produced by said drive means are always in opposing directions, and means for laterally displacing said scanner.

4,476,493

TELEVISION SCANNING OF MOTION PICTURE FILMS OF DIFFERENT FRAME ASPECT RATIOS

Dieter Poetsch, Ober-Ramstadt, and Volker Massmann, Mühltal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 366,935

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115367; May 29, 1981, 3121308

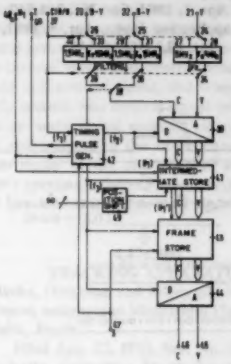
Int. Cl.³ H04N *3/36*

U.S. Cl. 358—214 **22 Claims**

1. Method of scanning motion pictures intended for projection on a wide screen in order to produce television signals by exposing successive frames of said motion pictures on semiconductor light sensing means and line-sequentially reading out from said sensing means video signals representing said successive motion picture frames, said method comprising the steps of:

time expanding video signals derived from the output of said sensing means to an extent compensating for the optical horizontal compression of the pictures on said film, and

selecting for television transmission a portion of the time-expanded signals corresponding to each television line by



providing a controllable offset in the beginning of read-out of video signals of said line and cutting off read-out of said video signals of said line after a predetermined interval after said beginning, said controllable offset being constant for each picture frame.

4,476,494

APPARATUS FOR CENTERING AND STABILIZING THE SIZE OF A TARGET IMAGE

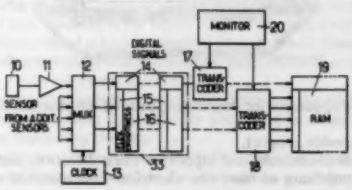
Jean Tugayé, 28 Av Président Kennedy, 75016 Paris (16), France

Filed Mar. 24, 1982, Ser. No. 361,553

Claims priority, application France, Mar. 30, 1981, 81 06330

Int. Cl.³ H04N *5/34, 7/18*

U.S. Cl. 358—222 **9 Claims**



1. A method for real time stabilization of the image of a scene in the field of view of an optoelectrical camera, comprising the steps of:

generating a reference frame having an invariable location with respect to said scene, defined by a set of addresses representative of predetermined points of said frame, each said point having predetermined coordinates in said frame,

generating a series of pixels each representative of a particular point in the field of view of said camera,

determining the coordinates of each said pixel in said frame,

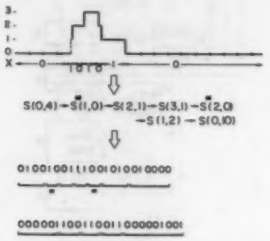
comparing the coordinates of each said pixel in said frame, and assigning said pixels to those of said predetermined points of said frame with which there is the best match.

4,476,495

MULTILEVEL SIGNAL COMPRESSION METHOD

Hiromichi Fujisawa; Hirohide Endo, both of Tokorozawa, and Hitoshi Komatsu, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,540
Claims priority, application Japan, Apr. 3, 1981, 56-49314
Int. Cl.³ H04M *1/00*
U.S. Cl. 358—262 2 Claims



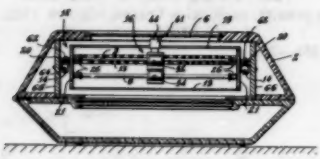
1. A multilevel signal compression method in which a digitized multilevel signal is encoded in respect of run-lengths, wherein a code which is composed of unit combinations each of run-length bits indicative of the run-length at each of the signal levels and a single continuation bit indicative of transition of said signal level is so prepared as to include a virtual run of zero length when the transition of the signal levels at adjacent sampling points departs from a predetermined order, and polarity of said continuation bit is inverted upon every occurrence of said transition of the signal level.

4,476,496

LINEAR MOTOR FACSIMILE MACHINE

Michael R. Thaler, Cheshire, Conn., assignor to Image Communications Inc., New Milford, Conn.

Filed Jun. 21, 1982, Ser. No. 390,210
Int. Cl.³ H04N *1/04*
U.S. Cl. 358—286 16 Claims



1. An apparatus for duplicating printed information comprising:

a movable support,

means for moving said support in a first direction, said means comprising at least one electrical coil mounted on said support and movable therewith and at least one longitudinal member mounted adjacent said electric coil, said longitudinal member having a plurality of magnetic elements spaced apart along its longitudinal axis, said electrical coil and magnetic elements being arranged so that when said electrical coil is energized magnetic interaction between said electrical coil and said magnetic elements causes said support to move along said longitudinal member,

means mounted on said movable support for generating signals corresponding to the information to be duplicated,

storage means for storing said signals corresponding to said information to be duplicated,

means mounted on said movable support for forming indicia on a recording medium corresponding to the signals stored in said storage means, and

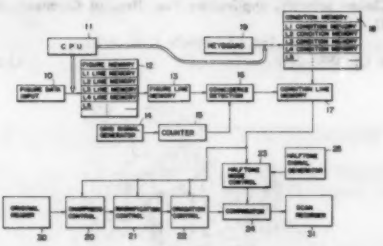
means for moving one of said support and said recording medium relative to the other in a second direction substantially perpendicular to said first direction.

4,476,497

IMAGE SCANNING AND RECORDING METHOD

Yuji Oshikoshi, Tokyo, and Toshitaka Agano, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 12, 1982, Ser. No. 397,444
Claims priority, application Japan, Jul. 17, 1981, 56-112029
Int. Cl.³ H04N *5/32, 5/14*
U.S. Cl. 358—298 5 Claims



1. An image scanning and recording method for recording an image by scanning a photosensitive recording medium with a light beam where said image to be recorded comprises a single X-ray photograph carrying an image of a certain portion of a patient's body, which comprises:

designating a plurality of different image regions on said X-ray photograph where each of said image regions comprises an area substantially greater than one pixel and where said designated image regions each correspond to a predetermined section of said certain portion of the patient's body;

preprocessing each designated image region to establish a predetermined image processing condition for that region;

scanning the preprocessed X-ray photograph to obtain an electric scanned image signal;

processing each said designated image region in said electric scanned image signal in accordance with the said predetermined image processing condition established for that region; and

recording each of the processed designated image regions in said electric scanned image signal on a photosensitive recording medium.

4,476,498

DEVIATION DETECTOR FOR FM VIDEO RECORDING SYSTEM

David A. Sheean, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

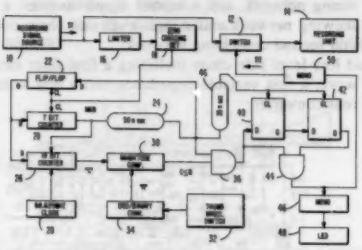
Filed Feb. 5, 1982, Ser. No. 346,370
Int. Cl.³ H03C *3/06;* H04N *5/76;* G11B *27/36*
U.S. Cl. 358—330 8 Claims

1. A deviation detector for an FM signal modulated by a video signal, comprising:

measuring means for measuring the average period of a given number of axis crossings of said FM signal to provide a binary number representative thereof at a measurement rate proportional to the average frequency of said FM signal to thereby provide an increased number of average period measurements as said frequency of said FM signal increases; and

comparing means for comparing the binary number representative of each average period measurement with a

predetermined number representative of a minimum desired average period to be detected to provide an indicator



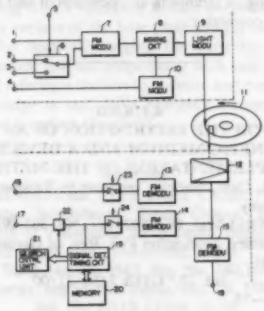
signal each time the measured average period is less than or equal to said predetermined number.

4,476,499

VIDEO DISC RECORDING AND REPRODUCING SYSTEM

Hitoshi Kanamaru; Toshiyuki Amaya; Kazutoyo Ishiguro, and Keiji Masaki, all of Saitama, Japan, assignors to Universal Pioneer Corporation, Tokyo, Japan

Continuation of Ser. No. 286,223, Jul. 23, 1981, abandoned. This application Apr. 25, 1983, Ser. No. 486,461
Claims priority, application Japan, Jul. 29, 1980, 55-104714
Int. Cl.³ H04N 5/76
U.S. Cl. 358—342 **9 Claims**



1. A video disc recording and reproducing system comprising:

(a) a video disc for recording frequency-multiplexed video and audio signals recorded on said video disc in two channels thereon and control signals including program signals partly substitutes for a portion of said audio signals; and

(b) a video disc player including:

(i) demodulator circuits for demodulating said video and audio signals recorded on said video disc and outputting said video and audio signals to respective output terminals thereof;

(ii) a central processing unit for demodulating said audio signal for detecting said control signal recorded on said video disc from a signal supplied on an output terminal of one of said demodulators;

(iii) a manually-operated switch connected to selectively supply and inhibit supply of said signal supplied on said output terminal to said central processing unit and to a respective one of said output terminals;

(iv) a memory for storing said control signal, said central processing unit controlling said memory to store said control signal when said central processing unit detects said control signal and reproducing said video and audio signals from predetermined locations corresponding to the control signal thus stored in a predetermined sequence, at a predetermined time and in a predetermined mode;

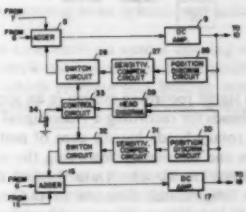
(v) means for inhibiting the supply of the output from said audio signal demodulator circuit connected to said central processing unit to said audio signal output terminals thereof when said central processing unit has detected said control signal; and wherein said video disc partly records said control signal only in the channel of said one audio signal, and said video disc player outputs said audio signal of the other channel instead of said audio signal of the one channel to said audio signal output terminals thereof when said central processing unit has detected said control signal.

4,476,500

TRACKING APPARATUS

Takenobu Isaka, Hirakata, and Kobayashi Masaaki, Kawanishi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 27, 1981, Ser. No. 297,085
Claims priority, application Japan, Sep. 1, 1980, 55-121647
Int. Cl.³ H04N 5/783
U.S. Cl. 360—10.3 **3 Claims**



1. A tracking apparatus for a video tape recorder having a closed-loop auto-tracking servo system which enables plural video heads to be automatically on-track by means of the mechanical displacement of plural electro-mechanical conversion elements having said plural video heads respectively mounted thereon, said closed-loop auto-tracking servo system producing a tracking error signal and including an adder means for adding a search signal produced by a search signal generator and said tracking error signal so as to thereby produce an on-tracking signal which is supplied to one of said plural electro-mechanical conversion elements, said tracking apparatus having a control means comprising:

a position discriminating circuit for detecting the polarity of said on-tracking signal and for providing an output signal corresponding thereto;

a sensitivity compensating circuit for converting said output signal from said position discriminating circuit to a modified output signal which corresponds to a predetermined displacement of one said plural electro-mechanical conversion elements;

a head discriminating circuit for comparing said signal supplied to one of said plural electro-mechanical conversion elements with another signal which is supplied to another of said plural electro-mechanical conversion elements and for providing an output signal in accordance with said correspondence;

a switch circuit for supplying said modified output signal from said senitivity compensating circuit to said adder in said auto-tracking servo system, said modified output signal of said sensitivity compensating circuit being added to said search signal and said tracking error signal by said added, said on-tracking signal being generated; and

a control circuit operatively connected to a manually operable two state track-jumping compensating switch for controlling said switch circuit in accordance with said output signal from said head discriminating circuit and said state of said track-jumping compensating switch, thereby allowing one of said plural heads to scan a desired track.

4,476,501

AUDIO SIGNAL RECORDING AND/OR REPRODUCING SYSTEM FOR ELIMINATING AUDIO CROSSTALK

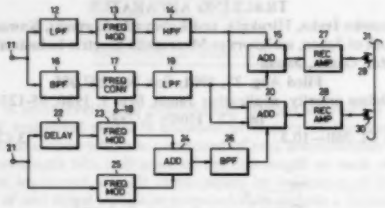
Akira Hirota, Chigasaki, and Yoshihiko Ota, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 9, 1982, Ser. No. 356,484

Claims priority, application Japan, Mar. 12, 1981, 56-35569

Int. Cl.³ H04N *5/782*

U.S. Cl. 360—19.1 **8 Claims**



1. An audio signal recording system in an apparatus using a pair of rotary heads for recording a video signal onto a recording tape, said rotary heads having gaps of mutually opposite azimuth angles and alternately recording the video signal on mutually adjacent tracks which are formed obliquely with respect to the longitudinal direction of the tape, said video signal being recorded in uniform increments of a predetermined duration, said audio signal recording system comprising:

delay means for delaying an input audio signal by a predetermined delay time, said predetermined delay time being equal to said predetermined duration of the video signal;

first multiplexing means for multiplexing said input audio signal and a delayed audio output signal of said delay means, to produce a multiplexed audio signal;

second multiplexing means for multiplexing the video signal and the multiplexed audio signal from said first multiplexing means; and

recording means using one of a pair of rotary heads for recording only the video signal on the tape, and means using the other of said pair of rotary heads for recording on the tape a multiplexed output signal of said second multiplexing means, so that the video signal and the multiplexed signal containing the video and the multiplexed audio signals are alternately recorded on the tracks on the tape.

4,476,502

NOISE REDUCTION SYSTEM

Kazuo Watanabe; Yasuo Kominami, both of Takasaki; Yoshiyuki Takizawa, Tokorozawa, and Akira Haeno, Iruma, all of Japan, assignors to Hitachi, Ltd. and Pioneer Electronic Corporation, both of Tokyo, Japan

Filed Aug. 27, 1982, Ser. No. 411,996

Claims priority, application Japan, Aug. 28, 1981, 56-134008

Int. Cl.³ G11B *5/45, 5/02*

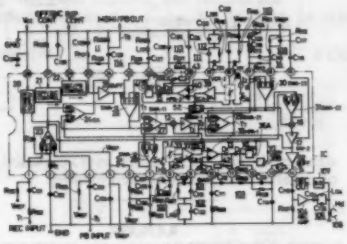
U.S. Cl. 360—65 **10 Claims**

1. A noise reduction system comprising:

a first level processing circuit which has a first combining network, and a first signal inverter, an anti-saturation network and a low-level side chain coupled to said first combining network;

a second level processing circuit which has a second combining network, and a second signal inverter, a spectral skewing network and a high-level side chain coupled to said second combining network;

said low-level side chain including a first filter circuit network, a first variable impedance and a first voltage-current converter;



said high-level side chain including a second filter circuit network, a second variable impedance and a second voltage-current converter and a third voltage-current converter whose characteristics are substantially equal to each other, and

a control circuit coupled to said third voltage-current converter, said control circuit including means for selectively permitting or inhibiting an operation of said third voltage-current converter.

4,476,503

METHOD FOR THE RECOGNITION OF AN EDGE OF A MAGNETIC MEDIUM AND A DEVICE FOR IMPLEMENTATION OF THE METHOD

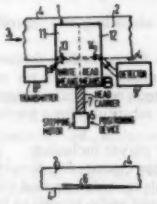
Erik Solhjell, Oslo, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Mar. 30, 1982, Ser. No. 363,492

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112886

Int. Cl.³ G11B *5/56, 21/00*

U.S. Cl. 360—75 **14 Claims**



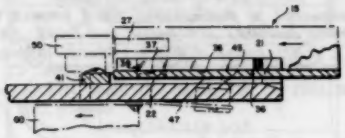
11. A method for recognizing an edge of a magnetic tape, comprising the steps of: providing a read and write unit having a write head and a read head; moving the tape from the write head toward the read head; energizing the write head for writing on the tape; moving the read and write heads so as to approach and cross an edge of the tape; and analyzing for presence or absence of a read signal from the read head and comparing this signal to a reference value so as to determine when the unit has crossed the edge of the tape.

4,476,504

DATA CARTRIDGE TAPE DRIVE ASSEMBLY

Michael P. Georges, P.O. Box 800, Norwood, Mass. 02062

Filed May 4, 1981, Ser. No. 259,853
Int. Cl.[3] G11B *5/78, 15/00*
U.S. Cl. 360—93 8 Claims



2. A cartridge tape drive assembly for receiving a cartridge containing a magnetic tape, positioning said cartridge in a fixed operational position, and moving said magnetic tape within said cartridge, said drive assembly comprising:

A. a baseplate having guide means for facilitating the insertion and positioning of a data tape cartridge into said drive assembly.

B. head means for reading from and/or writing on the tape, said head means mounted on said baseplate;

C. drive means for moving the tape past said head means to read data from or write data on said tape, said drive means being mounted on said baseplate; and

D. switch means mounted on said base plate for activing the drive assembly;

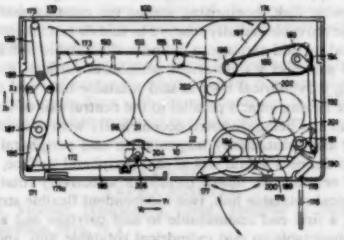
said guide means comprising (1) a guide surface having a first portion parallel to the opposing surface of said base plate and a second portion angled toward said base plate and ending with a reference surface perpendicular to said opposing surface of the base plate and (2) bearing surface means for resiliently urging the cartridge against said guide surface and for cooperating with said guide surface and said reference surface to position and positively retain the cartridge in said drive assembly for mechanical and electrical interface therewith.

4,476,505

MINIATURE TYPE TAPE CASSETTE

Haruki Ogata, Sagamihara; Kimio Ogawa, and Hiroyuki Umeda, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 18, 1982, Ser. No. 340,106
Claims priority, application Japan, Jan. 20, 1981, 56-7566
Int. Cl.[3] G11B *15/66, 23/08*
U.S. Cl. 360—94 8 Claims



1. A miniature type tape cassette which may be used with either a standard type recording and/or reproducing apparatus which operates with a standard type tape cassette or with a different type of recording and/or reproducing apparatus which uses miniature cassettes, said miniature type tape cassette comprising:

a cassette case having a size which is smaller than the size of said standard type tape cassette; and

a tape accommodated within said cassette case,

tape cassette adapter means in the external form and size of a standard type tape cassette,

said miniature type tape casette being independently loadable into said different type of recording and/or reproducing apparatus, and being loaded into said standard type recording and/or reproducing apparatus when mounted in said tape cassette adapter having said external form and size which is substantially equal to the form and size of said standard type tape cassette, said miniature type tape cassette being accommodated within said tape cassette adapter from which said tape is drawn out to form a predetermined tape path,

said tape cassette adapter having tape draw-out means which operatively moves between first and second positions for drawing the tape from the cassette case to form said predetermined tape path responsive to a movement from said first position to said second position, and holding means which operatively moves between locking and unlocking positions for holding the miniature type tape cassette when it is accommodated within said tape cassette adapter responsive to moving from said unlocking position to said locking position, said holding means assuming said locking position to prevent a removal of the miniature type tape cassette from the tape cassette adapter when said tape draw-out means assumes a position other than said first position responsive to an operation of said tape draw-out means,

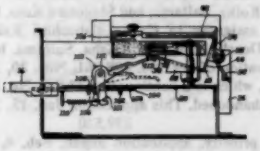
said cassette case having a cutout opening which receives said tape draw-out means in said first position, and a cutout part which receives said holding means when said holding means assumes said locking position.

4,476,506

CASSETTE HANDLING APPARATUS WITH IMPROVED CONTROL ARRANGEMENT

Edward R. Preiletz, Chicago, Ill., and Gerald D. Warden, Easton, Pa., assignors to Bell & Howell Company, Chicago, Ill.

Filed Dec. 31, 1981, Ser. No. 336,472
Int. Cl.[3] G11B *15/66*
U.S. Cl. 360—96.6 15 Claims



1. Apparatus for use with a cassette player/recorder comprising:

a frame defining a cassette receiving passage and a mounting plane for the mounting of operative components of a cassette player/recorder, said cassette receiving passage defining cassette receiving dimensions for the edge loading of a cassette therethrough;

cassette holder/loader means pivotally mounted with respect to said frame for movement between an upper loading position and a lower cassette transport operative position, said cassette holder/loader including a first support platform, said first support platform including two aper-

tures provided therein for alignment with the cassette hubs of a conventional cassette when a cassette is loaded edgewise into said cassette holder/loader in a predetermined loading position, said cassette holder/loader including means for biasing said first support platform to a first lower operative position; and

ejector/release control means responsive to a cassette being loaded into said cassette holder/loader means for controlling the position of said support platform and for selectively ejecting a cassette loaded into said cassette holder/loader means, said ejector/release control means comprising a first control arm pivotally mounted with respect to said frame, means for biasing said first control arm toward a cassette ejecting position, and a second control arm movable with said first control arm, said second control arm being disposed with respect to said first support platform so as to engage said first support platform and hold said first support platform in said upper loading position when said first control arm is in said cassette ejecting position, said first control arm being disposed with respect to said first support platform for engagement by the leading edge of an inserted cassette, said first and second control arms being pivoted toward a second release position as a cassette is inserted and loaded into said cassette holder/loader means, said first support platform being released to move to said lower cassette transport operative position when said first and second control arms are pivoted to said second release position and said second control arm disengages said first support platform, said second control arm being in engagement with said first support platform to hold said first and second control arms in said second release position when said first support platform is in said lower cassette transport operative position, said ejector release control means further comprising manually operable ejection means for pivoting said first support platform toward said upper loading position upon operation of said manually operable ejection means, said first and second control arms being released to pivot toward said cassette ejecting position as said first support platform is pivoted to release said second control arm from engagement by said first support platform, said first control arm acting against the leading edge of the cassette and pivoting to said cassette ejecting position to partially eject the cassette out said cassette receiving passage, said first and second control arms being extending planar portions of a common member.

4,476,507

MAGNETIC CARD TRANSPORTING APPARATUS

Hiroyuki Koike, Saitama, and Shigehiro Kato, Chichibu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Continuation of Ser. No. 098,761, Nov. 30, 1979, Pat. No. 4,358,103, which is a continuation of Ser. No. 872,154, Jan. 25, 1978, abandoned. This application Jan. 15, 1982, Ser. No. 339,520

Claims priority, application Japan, Feb. 4, 1977, 52-11281; Feb. 4, 1977, 52-11282; Feb. 4, 1977, 52-11283; Feb. 4, 1977, 52-11284; Feb. 4, 1977, 52-11285; Feb. 4, 1977, 52-11286

Int. Cl.³ G11B *5/48, 25/04*

U.S. Cl. 360—104 **5 Claims**

1. An apparatus for transporting a magnetic card, comprising:

a transport roller for transporting the magnetic card;

means for driving said transport roller;

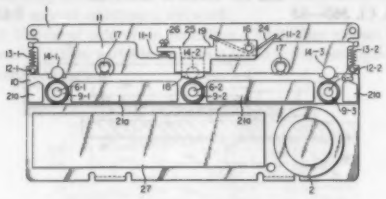
a base member for supporting said transport roller and said driving means;

a support member supported by an urging member and having a predetermined reference position with respect to said base member;

a pressing member, supported by said support member, for pressing the magnetic card to said transport roller;

a magnetic head having one end in engagement with said support member and another end pivotally supported on said base member to be movable in accordance with movement of said support member;

a resilient member for urging said magnetic head against the magnetic card; and



a limiting member, mounted on said support member, for displacing said magnetic head in accordance with the thickness of the magnetic card sandwiched by said transport roller and said pressing member.

4,476,508

APPARATUS FOR RECORDING FLEXIBLE MAGNETIC DISKS

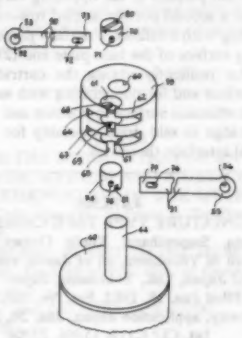
Sergio Tronzano, Caluso, and Carlo Vignal, Romano, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Nov. 12, 1981, Ser. No. 320,874

Claims priority, application Italy, Nov. 14, 1980, 88742 A/80

Int. Cl.³ G11B *5/55, 21/08*

U.S. Cl. 360—106 **4 Claims**



1. An apparatus for recording and/or reading information on a magnetic disk, comprising means for rotating said disk, a carriage movable radially relative to said disk, a magnetic head mounted on said carriage, a cylindrical rotatable hub having a central axis and a cylindrical peripheral surface, means for defining a cylindrical bore in said rotatable hub, said cylindrical bore having an axis parallel to the central axis of said rotatable hub and being disposed eccentrically with respect to said central axis substantially tangential to said peripheral surface so as to define a lateral slot in said peripheral surface, parallel to said central axis, motor means for selectively rotating said cylindrical rotatable hub, two independent flexible strips each having a first end connectable to said carriage and a second end connectable to said cylindrical rotatable hub, and means for individually connecting the second end of each one of said two independent flexible strips to said cylindrical rotatable hub, said connecting means comprising two cylindrical pins coaxially inserted into said cylindrical bore, each one of said pins having a locking element cooperative with a corresponding second end of said two flexible strips, so that a portion of each one of said two flexible strips adjacent said second end is inserted into said cylindrical bore through said lateral slot and

is wound on one of said two cylindrical pins inside said cylindrical bore.

4,476,509

THIN FILM MAGNETIC HEAD AND METHOD OF MANUFACTURING THE SAME

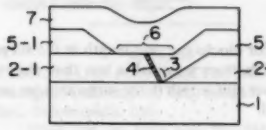
Katsuo Konishi; Kanji Kawano, both of Yokohama; Kohji Tamura, Ebina, and Mitsuo Abe, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1982, Ser. No. 349,529

Claims priority, application Japan, Feb. 20, 1981, 56-23006; Jan. 27, 1982, 57-9989

Int. Cl.³ G11B *5/25*

U.S. Cl. 360—119 **10 Claims**



1. A thin film magnetic head, comprising a substrate formed of a non-magnetic material, a first magnetic thin film formed on the substrate, a non-magnetic thin film formed on a part of the first magnetic thin film for forming a magnetic head gap, and a second magnetic thin film in contact with the non-magnetic thin film, a first groove formed, in a predetermined region of the first magnetic thin film, which has a depth reaching the non-magnetic substrate and is filled with the non-magnetic thin film and the second magnetic thin film,

one portion of the first magnetic thin film located on one side of said first groove constituting a main magnetic path for a half of a magnetic head core, a wall of which constitutes a surface of the magnetic head gap, while the other portion of the first magnetic thin film located on the other side of said first groove constitutes an auxiliary magnetic path for the other half of said magnetic head core,

the non-magnetic thin film being provided on at least the surface of the magnetic head gap,

the second magnetic thin film being formed on the first magnetic thin film, and a further groove being formed in the second magnetic thin film, whose depth at the position of the magnetic head gap reaches at least the surface of said one portion of the first magnetic thin film, and

the second magnetic thin film having one portion which is positioned on said one portion of the first magnetic film and constitutes an auxiliary magnetic path for the half of said magnetic core, and the other portion which is positioned on said other portion of the first magnetic film constituting a main magnetic path for the other half of said magnetic head core,

whereby the magnetic head gap is formed between opposite end faces of said main magnetic path portions of the two magnetic thin films with the non-magnetic thin film being sandwiched between said opposite end faces.

4,476,510

TAPE CASSETTE

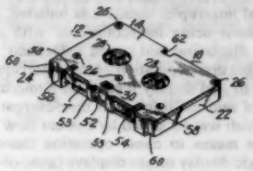
John W. Hoover, Huntington, Conn., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,539

Int. Cl.³ G11B *23/02*

U.S. Cl. 360—132 **8 Claims**

1. A thumb-sized tape cassette comprising a rectangular housing having a front wall provided with a center and opposite side openings therein, said side openings being positioned on either side of said center opening; supply and take-up reels of a tape member disposed within said housing, said tape member running between said reels; guide means for guiding said tape member in a run behind said front wall, said tape member being accessible through said openings of said front wall; a pressure-pad spring formed as a unitary continuous-surfaced leaf spring having only two bends therein to define a central section between said two bends and a leg section extending from each of said respective bends; a pressure pad secured to each respective leg section; a support post within said housing



and positioned on one side of said leaf spring to contact said central section of said leaf spring; and a pair of fulcrum posts within said housing positioned on the opposite side of said leaf spring from said support post to contact said central section of said leaf spring and provide a respective fulcrum for each leg section, whereby said pressure pads contact said tape member behind each side opening.

4,476,511

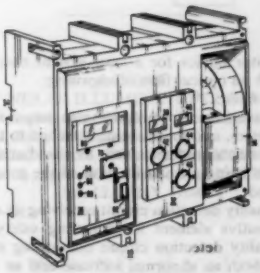
CIRCUIT INTERRUPTER WITH FRONT PANEL NUMERIC DISPLAY

Gary F. Saletta, Irwin; Robert T. Elms, and Joseph C. Engel, both of Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 374,360, May 3, 1982, abandoned, and Ser. No. 140,631, Apr. 15, 1980, abandoned. This application Nov. 23, 1983, Ser. No. 555,424

Int. Cl.³ H07H *3/093*

U.S. Cl. 361—96 **2 Claims**



1. Circuit interrupter apparatus, comprising:

interrupter means for conducting current flow through an associated electrical circuit and for operating to interrupt current flow therethrough on command;

sensing and powering means disposed in appropriate relationship with said interrupter means for sensing current flow therethrough, for providing a signal which is related to said current flow, and for providing operating power for said apparatus;

storage means for storing a multi-function time-current tripping characteristic;

electronic means connected to the output of said sensing and powering means, to said storage means, and to said interrupter means for analyzing electrical parameters of an associated circuit and for operating said interrupter means when current flow therethrough exceeds said time-current trip characteristic, said storage means additionally

comprising means for identifying each function of said multi-function trip characteristic with a numeric table;

numeric display means interconnected with said electronic means and visible from the exterior of said apparatus for displaying a substantially instantaneous real-time numerical representation of said parameters over a period of time;

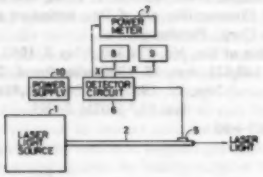
memory means for storing a value corresponding to the value of interrupter means current flow at which operation of said interrupter means was initiated, said numeric display means being interconnected with said memory means for displaying said stored value; and

means operable upon operation of said interrupter means for supplying to said display means the numeric label of the function of said multi-function time-current trip characteristic which was exceeded by current flow through said interrupter means to cause operation thereof; whereby said numeric display means displays cause-of-trip information.

4,476,512
MONITOR DEVICE FOR LASER SYSTEMS TRANSMITTING LASER LIGHT THROUGH OPTICAL FIBERS

Katsuyoshi Sunago, and Shinya Takenaka, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 1, 1982, Ser. No. 394,248
Claims priority, application Japan, Jul. 2, 1981, 56-97625
Int. Cl.³ H02H 5/04
U.S. Cl. 361—103 **2 Claims**



1. A monitor device for a laser system transmitting laser light through an optical fiber, comprising:

an optical fiber;

heat-sensitive means for producing an output to monitor the laser system, said means being attached to the exterior of said fiber at a predetermined, localized area of the fiber, said area being a small fraction of the total area of said fiber; and

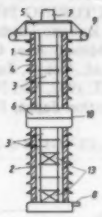
an abnormality detection circuit receiving an output of said heat-sensitive element for actuating safety means, said abnormality detection circuit comprising means for detecting both an abnormal increase and an abnormal decrease in laser power, said safety means being actuated for both conditions.

4,476,513
SURGE ARRESTER

Lennart Stenström, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vasterås, Sweden

Filed Dec. 16, 1981, Ser. No. 331,217
Claims priority, application Sweden, Dec. 19, 1980, 8008984
Int. Cl.³ H02H 9/04
U.S. Cl. 361—127 **5 Claims**

1. A surge arrester comprising a top terminal, a bottom terminal and at least two surge arrester units electrically connected in series between said top and bottom terminals, each said surge arrester unit comprising an electrically insulating housing with metallic flange means, a plurality of electrically series-connected metal oxide varistor blocks arranged in a stack in the electrically-insulating housing, said metallic flange means forming a joint between each adjacent pair of surge arrester units forming a galvanic connection between the varistor stacks and the outer surfaces of the electrically insulating housings, the varistor blocks being distributed such that the

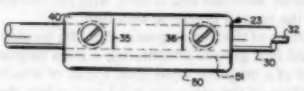


number of varistor blocks per unit length in the surge arrester unit nearest said bottom terminal is less than the number of varistor blocks per unit length in the surge arrester unit nearest said top terminal.

4,476,514
LINE SPACER

C. Fred Mykkanen, Anoka County, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 26, 1982, Ser. No. 411,926
Int. Cl.³ H05F 3/06
U.S. Cl. 361—213 **13 Claims**



1. A line spacer for a pair of insulated conductors each having conductive points projecting laterally beyond the insulation thereof in a common direction at sites spaced therealong, comprising a block of insulating material having a pair of laterally spaced grooves extending therealong near opposite edges thereof and opening to a first surface of the block, said grooves being deeper than the sum of the conductor diameter added to the point projection, and means severally accessible from said opposite edges for compressively retaining said conductors against motion in said grooves.

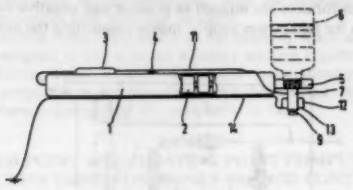
4,476,515
ATOMIZATION OF LIQUIDS

Ronald A. Coffee, Haslemere, England, assignor to Imperial Chemical Industries PLC, Hertfordshire, England

Division of Ser. No. 79,950, Sep. 28, 1979, Pat. No. 4,356,528, which is a continuation-in-part of Ser. No. 812,440, Jul. 1, 1977, abandoned. This application Oct. 21, 1982, Ser. No. 435,743
Claims priority, application United Kingdom, Jul. 15, 1976, 29539/76; Feb. 21, 1977, 7186/77
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ B05B 5/02
U.S. Cl. 361—226 **5 Claims**

1. A process of spraying a liquid onto a target comprising supplying said liquid from a source thereof through a passage to a spray orifice which has a surface of a material having resistivity below 10^{12} ohm.cm adjacent a field intensifying electrode, said surface being electrically charged and the electrode being at such a potential and so sited relative to said surface that an electrostatic field of such strength is created at said orifice that the liquid at said orifice is drawn out prepon-

derantly by electrostatic forces substantially without corona discharge into ligaments which break up into electrically



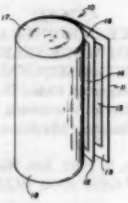
charged particles which are projected away from the electrode and into contact with the target.

4,476,516

DIELECTRIC FLUID FOR ELECTRICAL CAPACITORS

Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Oct. 24, 1983, Ser. No. 544,698
Int. Cl.³ H01G *4/22*
U.S. Cl. 361—315 **6 Claims**



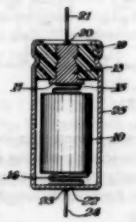
1. In a capacitor, a dielectric fluid comprising isopropyl biphenyl and an additive of at least 30% by volume of the total volume of said dielectric fluid of an epoxide 3,4-epoxycyclohexylmethyl-3,4 epoxycyclohexane carboxylate.

4,476,517

ALUMINUM ELECTROLYTIC CAPACITOR

E. James Fresia, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Oct. 7, 1983, Ser. No. 540,077
Int. Cl.³ H01G *4/04, 9/00*
U.S. Cl. 361—327 **4 Claims**



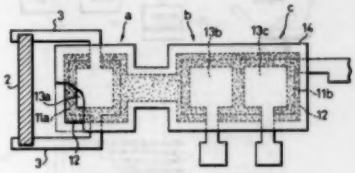
1. An aluminum electrolytic capacitor comprising a pair of aluminum electrode foils, at least one of which having a barrier layer dielectric oxide layer thereon, said foils being contiguously wound with interleaved spacer material and in contact with a low-resistivity electrolyte consisting essentially of 6 wt % diammonium adipate, 3 wt % ammonium formate, 16 wt % water, 0.025 to 0.3 wt % ammonium dihydrogen phosphate, 1 to 10 wt % p-nitrobenzoic acid and the balance, ethylene glycol.

4,476,518

THICK FILM ELECTRONIC CIRCUIT

Michiyoshi Tsukahara, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 372,196
Claims priority, application Japan, Apr. 27, 1981, 56-63734
Int. Cl.³ H01G *4/38, 1/015*
U.S. Cl. 361—328 **5 Claims**



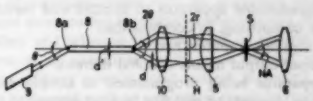
1. In a thick film electronic circuit including a plurality of capacitors, each capacitor comprising: a lower electrode formed by a conductive material deposited on a surface of an insulating substrate by thick film techniques; a dielectric layer formed by a dielectric material deposited on said lower electrode by thick film techniques; an upper electrode formed by a conductive material deposited on said dielectric layer by thick film techniques; and a protective layer coated over said upper electrode layer, the improvement wherein the dielectric layers of each of said capacitors are formed unitarily.

4,476,519

ANNULAR ILLUMINATION DEVICE

Toshisada Hayamizu, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 10, 1982, Ser. No. 406,913
Claims priority, application Japan, Aug. 13, 1981, 56-125932
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—32 **7 Claims**

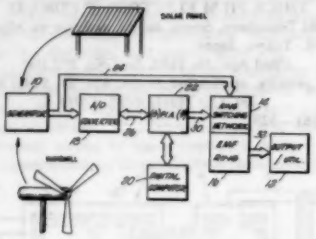


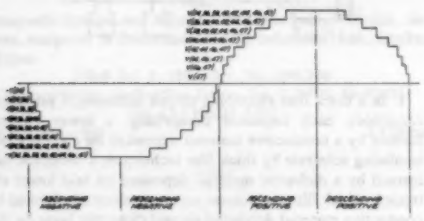
1. An annular illumination device comprising a light source means capable of projecting substantially parallel light rays, a tubular light transmitter having its entrance end face and its exit end face both inclined to said light rays and capable of transmitting said light rays with its inner face reflections, a light collecting lens arranged so that its front focal point coincides with the exit end face of said tubular light transmitter and capable of collecting a conical light bundle projected out of the exit end face of said tubular light transmitter to form an image of an annular light, and a condenser lens arranged so that its front focal point coincides with a rear focal point of said light collecting lens.

4,476,520
COMPUTER-CONTROLLED SYNTHETIC WAVEFORM GENERATOR

Elbert M. Gallemore, 21502 St. John La., Huntington Beach, Calif. 92646

Filed Feb. 24, 1982, Ser. No. 351,805
Int. Cl.³ H02M 1/12
U.S. Cl. 363—43 17 Claims





1. A system for converting force into electrical energy of preselected character comprising, in combination:

(a) a generator for producing electrical energy of a first character in response to said force;

(b) charge storage means including a plurality of charge storage elements;

(c) a first bus comprising at least one conductor providing an electrical path between the output of said generator and said charge storage means;

(d) a second bus comprising at least one conductor in electrical connection to said charge storage means;

(e) a switching network to control the flow of electrical energy from said first bus to the charge storage elements of said charge storage means and to control the flow of charge from said charge storage elements to said second bus; and

(f) programmable apparatus to control said switching network comprising, in combination:

(i) a digital computer; and

(ii) input-output means coupled thereto;

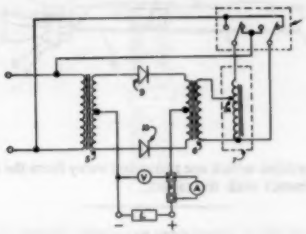
said apparatus being programmed to couple said charge storage elements to said first bus in response to the instantaneous value of the output of said generator.

4,476,521
PERIN RECTIFIER APPARATUS

Peter Kljucaricek, 30814 Morosso, Warren, Mich. 48093

Filed Jun. 1, 1983, Ser. No. 500,164
Int. Cl.³ H02M 7/00
U.S. Cl. 363—101 8 Claims

1. Improvement in a regulated D.C. power supply having a conventional main transformer with a center tap secondary and rectifying elements, the improvement comprising a buck-boost transformer, and a regulating device, said buck-boost transformer being of the same type construction as the main transformer and also having a center tap secondary, the secondary of the buck-boost transformer being connected in circuit with the secondary of the main transformer and said rectifying elements so that the center taps of said main and buck-boost transformers are utilized as positive and negative output terminals for said power supply, means connecting the input of

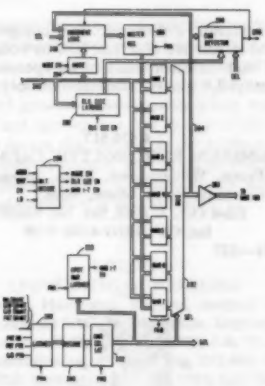


said main transformer to the input of said regulating device and the output of said regulating device to the primary of said buck-boost transformer, whereby a regulated D.C. power output is provided by the buck-boost transformer bucking or boosting the main transformer.

4,476,522
PROGRAMMABLE PERIPHERAL PROCESSING CONTROLLER WITH MODE-SELECTABLE ADDRESS REGISTER SEQUENCING

Kenneth A. Bushaw, Longmont, Colo.; Darwin P. Rackley, Boca Raton, Fla., and Milton H. Woodward, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1981, Ser. No. 241,902
Int. Cl.³ G06F 3/00, 9/22, 15/16
U.S. Cl. 364—200 9 Claims



1. A peripheral processing controller in a system having a plurality of peripheral devices processing data directly with a memory and independently of a central processor, said controller providing access from each peripheral device to the memory and comprising:

a plurality of memory address registers, each register associated with one of the peripheral devices and assigned an access mode, defining a memory space addressing sequence, and a memory space allocation;

said memory address registers being initialized to a starting address;

means for accessing the memory with the starting address from a selected one of said memory address registers, said

accessing means responsive to said access mode for advancing the access address through memory space in the address sequence controlled by said access mode as the peripheral device associated with the selected register processes data with the memory;

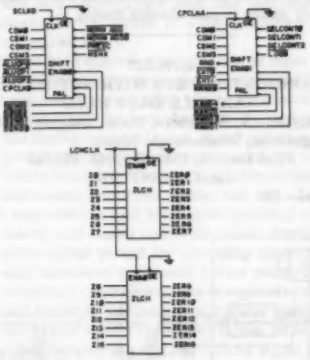
detection means responsive to the memory space allocation assigned to the selected memory address register for detecting when a block of memory space allocated to the peripheral device associated with the selected register has been consumed by the peripheral device.

4,476,523

FIXED POINT AND FLOATING POINT COMPUTATION UNITS USING COMMONLY SHARED CONTROL FIELDS

Robert W. Beauchamp, Milford, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed Jun. 11, 1981, Ser. No. 272,507
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **7 Claims**



1. In a data processing system requiring fixed point and floating point computation operations

an arithmetic computation unit for providing primarily fixed point arithmetic computations,

a separate floating point computation unit comprising an exponent computation unit and a mantissa computation unit for providing primarily floating point arithmetic computations,

a single control store means for supplying microinstructions for controlling the operations of both said arithmetic computation unit and said floating point computation unit, both said arithmetic computation unit and said floating point computation unit being responsive to a plurality of commonly shared control fields of each said microinstruction during their respective operations and said floating point computation unit being further responsive to at least one additional control field of each of said microinstruction during its operation.

4,476,524

PAGE STORAGE CONTROL METHODS AND MEANS

David T. Brown; Don W. Rain, both of Poughkeepsie, and Richard J. Schmalz, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,907
Int. Cl.³ G06F *9/00, 13/00, 13/06*
U.S. Cl. 364—200 **21 Claims**

1. In a data processing system having at least a central processor (CP), main storage (MS), a channel processor (CH), and a storage control means (SC) for connecting MS to the CP and to the CH, the system characterized by:

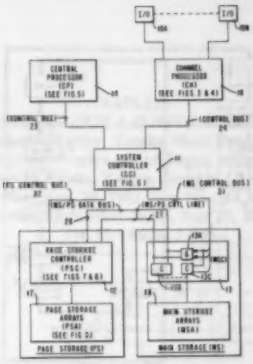
first and second data storage devices for storing data records;

first data bus means in the SC for connecting MS to the first data storage device to provide a first record transfer data bus between MS and the first data storage device;

second data bus means in the SC for connecting MS to the second data storage device to provide a second record transfer bus between MS and the second data storage device;

a CH program for transferring records between the first and second data storage devices through MS:

a CP instruction for execution on a CP that designates the first data storage device and accesses a field in MS designating the second data storage device for a record transfer;



the CH program including channel control words (CCWs) for controlling a record transfer between MS and the first data storage device on the first data bus means, and other CCWs for controlling a record transfer between MS and the second data storage device on on the second data bus means;

whereby a three-media page transfer is obtained between the first device, MS and the second device in either direction by means of a signal CH program.

4,476,525

PIPELINE-CONTROLLED DATA PROCESSING SYSTEM CAPABLE OF PERFORMING A PLURALITY OF INSTRUCTIONS SIMULTANEOUSLY

Hideshi Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 14, 1981, Ser. No. 292,849
Claims priority, application Japan, Aug. 28, 1980, 55-118628
Int. Cl.³ G06F *9/38, 7/00*
U.S. Cl. 364—200 **2 Claims**

1. A pipeline controlled data processing system for executing instructions, wherein each instruction is executed in a plurality of sequential stages with the sequential stages of first and second consecutive instructions overlapping in time with one another and wherein the last stage of execution of each instruction is an execution cycle, each of said instructions having an address portion, said system including a register means to be loaded with an execution result in response to an instruction, and memory means having a plurality of locations, said data processing system further comprising:

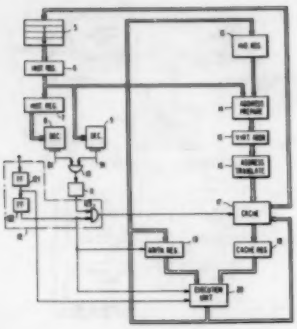
instruction prefetch means connected to said memory means for prefetching instructions from said memory means and decoding said instructions;

first detection means connected to said instruction prefetch means for detecting that the execution cycle of a first instruction requires more than one machine cycle to be performed and for detecting that said first instruction instructs the generation of a first execution result and the loading of said first execution result into said register means;

second detection means connected to said instruction prefetch means for detecting that a second instruction, following said first instruction and prefetched by said in-

struction prefetch means prior to completion of the execution of said first instruction, requires fewer machine cycles to be performed than said first instruction and instructs the storing of said first execution result from said register means into a location of said memory means designated by said address of said second instruction;

control means responsive to said first and second detection means for supplying a control signal before the completion of said first instruction; and



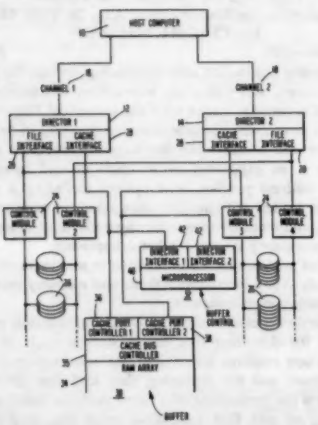
execution means responsive to said control signal for storing said first execution result into the location of said memory means designated by said address of said second instruction and simultaneously with the loading of said first execution result into said register means in accordance with said first instruction, to thereby complete the execution of said first and second instructions at the same time.

4,476,526

CACHE BUFFERED MEMORY SUBSYSTEM

P. David Dodd, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Nov. 27, 1981, Ser. No. 325,346
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **14 Claims**



1. A data storage system for use with a host computer, said computer comprising an arithmetic and logic unit and a main memory unit for containment of data to be processed and of programs to control said processing, said host computer being adapted to generate input/output commands directed to secondary data storage means connected to said host computer via channel means, said secondary data storage means comprising:

one or more long-term magnetic data storage means;

control module means for controlling said long-term data storage means;

director means for controlling flow of data between said channel means, said control module means and said long-term data storage means in response to an input/output command; and

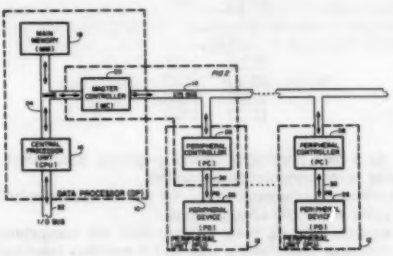
solid-state cache memory means for containment of data anticipated to be the subject of a subsequent input/output command, said cache memory means being connected to said director means by first circuit means establishing a first data path from said long-term data storage means through said control module means and said director means into said cache, and by second circuit means establishing a second data path from said cache through said director means to said channel means.

4,476,527

SYNCHRONOUS DATA BUS WITH AUTOMATICALLY VARIABLE DATA RATE

John B. Clayton, IV, Northboro, Mass., assignor to Data General Corporation, Westborough, Mass.

Filed Dec. 10, 1981, Ser. No. 329,489
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **6 Claims**



1. In a data processing system including processor means for processing said data, main memory means for storing said data, at least one peripheral device means, and bus system means for conducting information including main memory addresses and said data between said main memory means and said at least one peripheral device means, said bus system means comprising:

bus means, including

a plurality of address/data lines for conducting said information,

a clock line for conducting a clock signal, and

a hold line for conducting a hold signal;

master controller means, including

clock means having an output connected to said clock line for providing a clock signal having a fixed clock signal period,

master register means connected between said address/data lines and said main memory means and responsive to said clock signal for storing and transferring said information between said address/data lines and said main memory means in synchronization with said clock signal, and

master hold control means having an output connected to and an input connected from said hold line, and

(a) responsive to operation of said main memory means for providing said hold signal on said hold line during each said fixed clock signal period wherein said main

memory means is not ready to receive said information provided on said address/data lines by said peripheral device means, and

(b) responsive to said hold signal provided on said hold line during a said fixed clock signal period by a peripheral controller means associated with said peripheral device means for providing control signals to said master controller means and said main memory means to maintain said information stored in said master register means for transfer to said peripheral device means on said address/data lines during said fixed clock signal period; and

said peripheral controller means associated with each one of said peripheral device means, each one of said peripheral controller means including

peripheral register means connected between said address/data lines and said associated peripheral device means and responsive to said clock signal on said clock line for storing and transferring said information between said address/data lines and said associated peripheral device means in synchronization with said clock signal, and

peripheral hold control means having an input connected from and an output connected to said hold line, and

(a) responsive to operation of said associated peripheral device means for providing a hold signal on said hold line during each said clock signal period wherein said peripheral device means is not ready to receive said information provided on said address/data lines by said master controller means, and

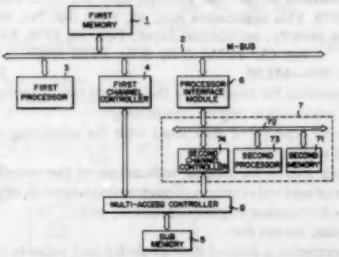
(b) responsive to said hold signal provided on said hold line by said master controller means during said fixed clock signal period for providing control signals to said associated peripheral device means and to said peripheral controller means to maintain said information stored in said peripheral register means for transfer to said master controller means on said address/data lines during said fixed clock signal period.

4,476,528

METHOD AND APPARATUS FOR CONTROLLING A DATA ACCESS IN A DATA BASE MANAGEMENT SYSTEM

Yoshihiro Matsumoto; Kunio Takezawa, and Ken Masegi, all of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 20, 1982, Ser. No. 409,862
Claims priority, application Japan, Sep. 2, 1981, 56-138180
Int. Cl.³ G06F *15/40*
U.S. Cl. 364—200 **9 Claims**



1. A method for controlling data access in a computer having first storage means and second storage means, both for storing data required to execute a program including at least one data operation instruction, comprising the steps of:

transferring data required by said data operation instruction from said second storage means to a location in said first storage means, prior to execution of said data operation instruction; and

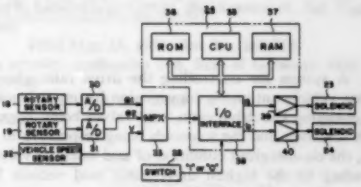
informing the data operation instruction of the address of said location of the data required thereby, prior to execution of the data operation instruction.

4,476,529

CONTROL SYSTEM FOR A POWER STEERING DEVICE

Keiichi Nakamura, Kariya; Yutaka Mori, Toyokawa, and Yoshiharu Inaguma, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 25, 1982, Ser. No. 411,349
Claims priority, application Japan, Sep. 16, 1981, 56-145706
Int. Cl.³ B62D *5/06*
U.S. Cl. 364—424 **4 Claims**



1. A control system for a power steering device having a steering force transmitting mechanism for transmitting manual steering force applied to a steering wheel to at least one steerable wheel, said steering force transmitting mechanism including a fluid supply and a power cylinder coupled to the fluid supply for imparting assisting force thereto, said control system comprising:

a solenoid valve fluidally coupled between said power cylinder and said fluid supply, including,

(i) a valve chamber and a spool slidably received in said valve chamber without any mechanical connection with said steering force transmitting mechanism for controlling the supply and exhaust of pressurized fluid to and from said power cylinder, and

(ii) a pair of solenoids for controlling the sliding movement of said spool;

first and second detecting means for detecting the rotary angular position of said steering wheel and the vehicle driving speed so as to output rotary angular position data and driving speed data, respectively;

memory means for storing a plurality of first control values respectively associated with various vehicle driving speeds; and

control circuit means connected to said pair of said solenoids and said memory means and responsive to said rotary angular position data and said driving speed data respectively supplied from said first and second detecting means for selecting one of said pair of said solenoids and one of said plurality of said first control values and for applying to said selected one of said first pair of said solenoids an electric current having a value corresponding to said selected one of said plurality of said first control values,

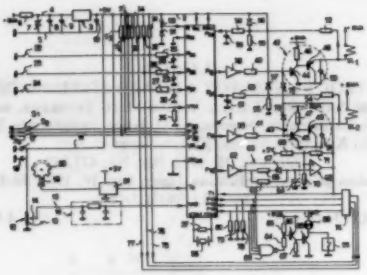
whereby said assisting force generated by said power cylinder is controlled in correspondence to said detected vehicle driving speed.

4,476,530

MICROCOMPUTER ELECTRONIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION OF MOTOR VEHICLE

Gerard Pannier, Bois d'Arcy, and Jean C. Roumy, Meudon, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 27, 1981, Ser. No. 248,235
Claims priority, application France, Apr. 3, 1980, 80 07584
Int. Cl.³ B60K *41/18;* **G06J** *3/00*
U.S. Cl. 364—424.1 **13 Claims**



1. A system for controlling the drive ratio changes in a motor vehicle automatic transmission having solenoid valves for changing the drive ratio, said valves being responsive to their solenoids and the solenoids being responsive to said system, the de-energized condition of said solenoid valves corresponding to the highest drive ratio, said vehicle having a source of energizing current, said system comprising:

power amplifiers, each connected to the solenoid of a said solenoid valve for energizing it,

a reset circuit,

programmed microcomputer means connected to said power amplifiers and to said source for selectively governing the supply of energizing current to said solenoids through said power amplifiers, said microcomputer means also having resetting means connected to said reset circuit for re-initializing the program of said microcomputer means whenever the supply voltage drops to zero or whenever the microcomputer supply voltage drops below the value necessary for its proper operation, so that upon re-initialization of the program of said microcomputer, said solenoid valves are in their de-energized condition, thus assuring that the transmission will then be in its highest drive ratio when the program begins running.

4,476,531

ENGINE ANALYZER WITH DIGITAL WAVEFORM DISPLAY

Joseph A. Marino, Waukesha; Michael J. Kling, Mequon, both of Wis., and Sydney J. Roth, Largo, Fla., assignors to Bear Automotive Service Equipment Company, Milwaukee, Wis.

Filed Dec. 4, 1981, Ser. No. 327,734
Int. Cl.³ G01M *15/00;* **G06F** *15/20*
U.S. Cl. 364—431.01 **22 Claims**

1. A test system for testing operation of a selected system or component of a multicylinder internal combustion engine, the test system comprising:

means for providing a periodic analog electrical input waveform representative of operation of the selected system or component of the internal combustion engine under a test condition, the analog input waveform having a period which varies with engine speed;

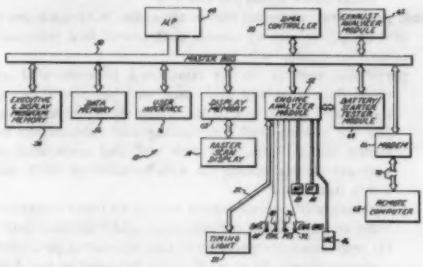
analog-to-digital (A/D) converter means for sampling the analog input waveform periodically and converting each sample to a digital sample value which represents magnitude of the waveform at a time when the sample was taken;

data memory means for storing the digital sample values;

means for selecting a test to be performed;

means for maintaining a cylinder count based upon a signal derived from the engine;

means for supplying a signal to the A/D converter means to initiate sampling of the analog input waveform by the A/D converter means as a function of the test selected and the cylinder count;



means for transferring a predetermined number of the digital sample values representative of the input waveform from the A/D converter means to selected locations in the data memory means based upon the test selected;

means for selecting a display mode;

means for converting stored digital sample values to display data based upon the display mode selected; and

display means for displaying a simulated analog visual representation of the magnitude of the input waveform as a function of time based upon the display data.

4,476,532

METHOD AND APPARATUS FOR CONTROLLING THE DUTY CYCLE OF AN OFF-ON TYPE VALVE BY MONITORING THE HISTORY OF THE STATE OF THE VALVE

Susumu Akiyama, Kariya; Kenzo Ito, Okazaki; Hiroyasu Fukaya, Nagoya; Haruhiko Ogiso, Kariya; Yuji Hirabayashi, Aichi, and Takahide Kawamura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 103,942, Dec. 14, 1979, Pat. No. 4,347,570. This application Aug. 18, 1982, Ser. No. 409,349
Claims priority, application Japan, Dec. 18, 1978, 53-157782
Int. Cl.³ F02M *7/16, 9/04;* **F02B** *5/02*
U.S. Cl. 364—431.05 **3 Claims**

3. Apparatus for controlling the air-fuel ratio supplied to an internal combustion engine comprising:

an on-off type valve associated with the supplying of air to said engine;

memory means for storing indications of the on-off condition of said valve over a predetermined number of periods;

means for sensing engine conditions; and

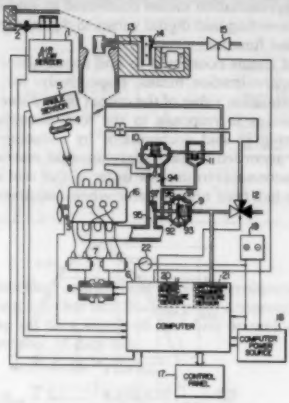
processor means for:

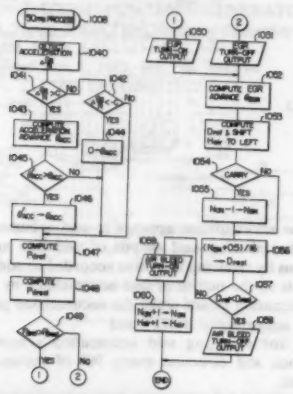
determining a desired duty cycle for said valve in response to said condition,

determining an actual duty cycle of said valve in response to said indications stored in said memory means,

turning off said valve and replacing the oldest indication stored in said memory means with an indication of said turning off when said desired duty cycle is less than said actual duty cycle, and

turning on said valve and replacing the oldest indication stored in said memory means with an indication of said





turning on when said desired duty cycle is not less than said actual duty cycle.

4,476,533

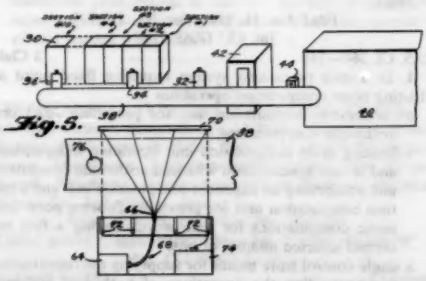
GLASSWARE GAUGING SYSTEM

Stephen W. Daudt, Longmont; George W. Gleason, Boulder; William C. Hermanson, Boulder, and Arthur A. Olsen, Boulder, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Jul. 8, 1981, Ser. No. 281,467

Int. Cl.³ G01B *11/00*

U.S. Cl. 364—473 **13 Claims**



1. In glassware manufacturing apparatus including an individual section machine having a plurality of sections, each of said plurality of sections producing glassware articles of manufacture, and a conveyor for carrying said glassware articles of manufacture from said individual section machine to a lehr, the improvement comprising non-contact guager means positioned along said conveyor for measuring said glassware articles of manufacture while they are in transit on said conveyor from said individual section machine to said lehr, said gauger means comprising:

a light-generating means;

a light-detecting means comprising a plurality of detectors arranged in an array for signaling the interaction of energy from said light-generating means with said glassware articles of manufacture on said conveyor; and

means for receiving the signals produced by said light-detecting means and for measuring, based on said signals, the diameter of said glassware articles of manufacture, the perpendicularity of an edge of said glassware articles of manufacture, the variation in the height of portions of said glassware articles of manufacture, and the roundness of said glassware articles of manufacture.

4,476,534

FIXED-CYCLE-CONTROLLED FILLING MACHINE

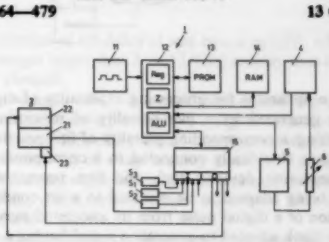
Hermann Schlosser, Bad Kreuznach, Fed. Rep. of Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 266,923

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019940

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—479 **13 Claims**



1. An arrangement for controlling a bottle filling machine having a stationary part, a rotating part provided with filling elements, each filling element having operatively associated therewith at least one valve and one signal emitter, the latter being actuated by the filling material rising in a container which is briefly pressed onto the respective filling element for filling purposes, comprising:

a registering and storage device which is synchronously connected step-for-step with the circulation path of said rotating part of said filling machine in the manner of a shift register, and which has a number of register locations and storage means which are at least adjustable to the number of filling elements in circulation;

a sensing device arranged on said rotating part of said filling machine and provided with feeler elements which respond to breakage of a container to be filled, and enter an appropriate marking in said registering and storage device;

a discharge element for discharging containers from said filling machine;

an ejection device located in the region of said discharge element which, when actuated, ejects a container from a row of containers leaving said filling machine;

a counting chain of relays with that number of counting locations having storage elements which corresponds to an integral multiple of the number of filling elements in circulation, increased by the necessary advancing steps between the arrangement of said sensing device and said ejection device, said counting chain of relays being con-

nected to said registering and storage device for taking over information; and

a switching device, said counting chain of relays being connected to said switching device for emitting switching pulses in the advancing step spacing between said sensing and ejection devices, said switching device serving to actuate said ejection device.

4,476,535

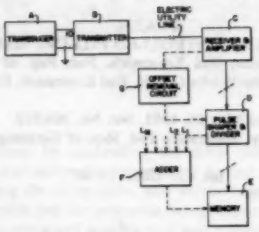
SYSTEM FOR MONITORING, TRANSMITTING AND CONDITIONING OF INFORMATION GATHERED AT SELECTED LOCATIONS

Clement T. Loshing, 17836 Lake Rd., Lakewood, Ohio 44107, and Ralph J. Thompson, 2399 W. Sprague Rd., Broadview Heights, Ohio 44147

Division of Ser. No. 44,686, Jun. 1, 1979,. This application Jun. 15, 1981, Ser. No. 273,933

Int. Cl.³ G08C *19/16*

U.S. Cl. 364—480 **4 Claims**



1. An apparatus for processing a plurality of digital pulse signals generated by a like plurality of measuring devices comprising: a corresponding plurality of first resettable memory means electrically connected to a corresponding one of said measuring devices, each said first resettable memory means being adapted to be actuated to a set condition upon reception of a digital pulse from its associated measuring device; a clock adapted to generate a signal having a frequency equal to or greater than the product of the number of measuring devices from which digital pulses are received and the highest pulse rate expected from any single measuring device; a second resettable memory means; switch means adapted to sequentially connect and then disconnect each of said first resettable memory means to said second resettable memory means at a rate determined by said clock; means adapted to sequentially activate each switch means; means adapted to reset each said first resettable memory means; and means adapted to reset said second resettable memory means after each of said first resettable memory means has been connected to and then disconnected from said second resettable memory means.

4,476,536

DIGITAL SINE WAVE SYNTHESIZING METHOD AND APPARATUS

Gardner D. Jones, Jr., Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1981, Ser. No. 331,499

Int. Cl.³ G06F *15/34*; G06J *1/00*

U.S. Cl. 364—721 **4 Claims**

1. Apparatus for generating analog sine wave functions, comprising:

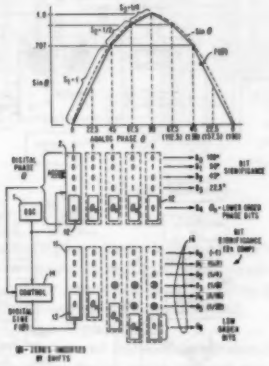
a source of digital values representive of phase angle increments;

a clocking means connected to said source for clocking out to an accumulator said digital values at a fixed clocking rate;

a digital binary accumulator connected to said clocking means for accumulating said digital values;

a sine approximation means connected to said accumulator for converting said digital values to digital representations of a sine function;

a control means connected to said accumulator and to said sine approximation means, respectively, for altering the approximation value of the output of said sine approximation means in response to the total accumulated value occurring in said accumulator by reducing the significance accorded by said approximation means to the further increments to the low order bits of said accumulator to one-half their normal value when a combined 45° phase



value accumulation appears in said accumulator and by further altering said output of said sine approximation means by reducing the value accorded to additional increments to the output of said accumulator by said sine approximation means when the accumulated phase value in said accumulator is 67½°; and

means for reversing said accumulator's modification sequence and direction every 90° of accumulated phase value;

means connected to said sine approximation means for converting the output value in said approximation means to a step wise analog output voltage approximating a sine wave function.

4,476,537

FIXED POINT AND FLOATING POINT COMPUTATION UNITS USING COMMONLY SHARED CONTROL FIELDS

Jonathan S. Blau, Natick, and James B. Stein, Marlboro, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Jun. 11, 1981, Ser. No. 272,777

Int. Cl.³ G06F *7/48*

U.S. Cl. 364—748 **3 Claims**

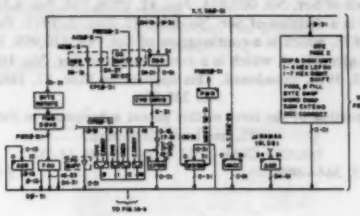
1. In a data processing system requiring fixed point and floating point computation operations

an arithmetic computation unit for providing fixed point arithmetic computations,

a floating point computation unit operating independently and in time synchronism with said arithmetic computation unit comprising an exponent computation unit and a mantissa computation unit for providing floating point arithmetic computations for data words having a first or a second selected number of bits,

a single control store means for supplying microinstructions for controlling the operations of both said arithmetic computation unit and said floating point computation unit, both said computation units being responsive to a plurality

of commonly shared control fields of said microinstructions during their respective operations,
said floating point computation unit being further responsive



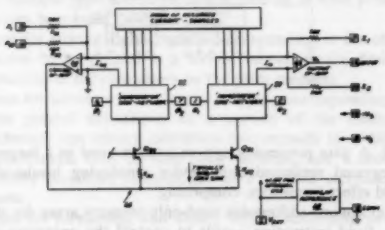
to an additional control field of said microinstructions for identifying whether said floating point computation unit is operating on data words of said first or said second selected number of data bits.

4,476,538

TRIGONOMETRIC FUNCTION GENERATOR

Barrie Gilbert, Forest Grove, Oreg., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Feb. 1, 1982, Ser. No. 344,544
Int. Cl.³ G06G 7/22
U.S. Cl. 364—817 **13 Claims**



1. A trigonometric function generator for selectively producing any of the standard trigonometric functions, comprising:

a first sine (cosine) network arranged to receive a first angle input signal and to produce a first output signal responsive to the sine (cosine) of the first input angle;

a second sine (cosine) network arranged to receive a second angle input signal and to produce a second output signal responsive to the sine (cosine) of the second input angle; and

circuit means interconnecting said first and second networks and including means to produce a composite output signal therefrom proportional to the sine (cosine) of said first input angle and inversely proportional to the sine (cosine) of said second input angle.

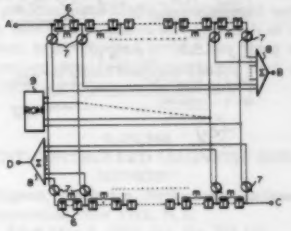
4,476,539

TRANSVERSAL TYPE SMEAR-DESMEAR FILTER

Michitoshi Tamori, deceased, late of Tokyo, Japan (by Yumi Tamori, administrator); Hideo Kobayashi, Kawasaki, Japan; Kazuo Hashimoto, Ichigayatamachi, Japan, and Kazuo Kawai, Yokohama, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,625
Claims priority, application Japan, Jul. 7, 1981, 56-104970
Int. Cl.³ G06G 7/02
U.S. Cl. 364—825 **2 Claims**

1. A transversal type smear-desmear filter comprising an input terminal for receiving an input signal, a plurality of series connected delay elements each having the delay time $1/(2f_2)$ where f_2 is the highest frequency component of an input signal, the first of said series of plurality of delay elements being coupled to said input terminal, a plurality of tap weight coefficient means each coupled to a junction between adjacent delay elements of said series of delay elements, means for multiplying the input to said tap weight coefficient means by a predetermined number, an adder for providing the sum of all the outputs of said tap weight coefficient means, and an output terminal coupled with the output of said adder to provide the output of the filter, characterized in that



(a) the duration of the delay of said taps is $m/(2f_2)$, where m is an integer larger than 2, and $1/(2f_2)$ is delay time of each delay element,

(b) a tap weight which is a multiplier of said tap weight coefficient means is provided by a digital memory which stores values defined by Bessel function value according to a position (n) of a tap, a delay time (τ) of each delay element, delay expansion width (a) and said integer (m),

(c) the delay characteristics of said transversal filter is sinusoidal, and

(d) the transfer function of the filter as a smear filter is

$$\exp\left(-j\frac{a}{\tau m}\sin(m\omega\tau)\right) = \sum_{n=1}^{\infty} J_n\left(\frac{a}{\tau m}\right)(-1)^n\exp(-jnm\omega\tau) + J_0\left(\frac{a}{\tau m}\right) + \sum_{n=1}^{\infty} J_n\left(\frac{a}{\tau m}\right)\exp(jnm\omega\tau)$$

, and

(e) the transfer function of the filter as a desmear filter is

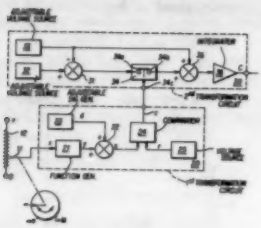
$$\exp\left(j\frac{a}{\tau m}\right)\sin(m\omega\tau) = \sum_{n=1}^{\infty} J_n\left(\frac{a}{\tau m}\right)\exp(-jnm\omega\tau) + J_0\left(\frac{a}{\tau m}\right) + \sum_{n=1}^{\infty} J_n\left(\frac{a}{\tau m}\right)(-1)^n\exp(jnm\omega\tau)$$

4,476,540

NON-LINEAR FUNCTION GENERATOR

José R. Corral, Vaux le Penil, France, assignor to SNECMA, Paris, France

Filed May 24, 1982, Ser. No. 381,394
Claims priority, application France, May 27, 1981, 81 10513
Int. Cl.[3] G01R 17/20; G01D 5/16
U.S. Cl. 364—851 6 Claims



1. A potentiometric system for converting the position of a mobile element into a voltage C which varies according to a predetermined law between a predetermined minimum value Cmin and a maximum value Cmax when the mobile element is moved from a first to a second position, said system comprising:

a linear potentiometer having a slider which is connected to said mobile element and said potentiometer outputting a variable amplitude signal as a function of the position of said slider;

a function generator controlled by the output signal of said potentiometer whereby said function generator outputs a signal which varies according to a predetermined non-linear function of said output signal of said potentiometer;

generator means for outputting a sawtooth signal which varies between a minimum value and a predetermined maximum value;

first adder means which receives on a first input said sawtooth signal and which receives on a second input the output of said function generator whereby said adder means add said signals received on said first and said second input and outputs a sum signal;

voltage source means outputting a signal representing a predetermined threshold value;

comparative means for comparing said sum signal and said signal representing said predetermined threshold value and for providing and output.

subtractor circuit having a first input for receiving said predetermined maximum value Cmax and a second input for receiving said predetermined minimum value Cmin and for delivering an output representative of Cmax−C-min;

switch means receiving the output of said subractor means and providing an output controlled by the output of said comparator;

second adder means receiving on a first input a signal representative of Cmin and on a second input the output of said switch means; and

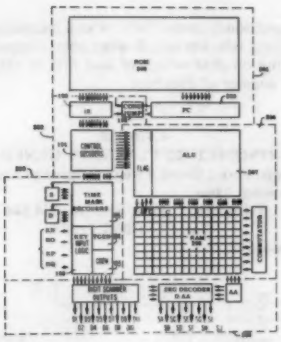
an output integrator means outputting the voltage c in the form of a continuous signal wherein the amplitude of said voltage c represents the average value of the signal supplied by said second adder means.

4,476,541

VARIABLE FUNCTION PROGRAMMED SYSTEM

Gary W. Boone, and Michael J. Cochran, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 002,814, Jan. 12, 1979, Pat. No. 4,326,265, which is a division of Ser. No. 856,932, Dec. 2, 1977, Pat. No. 4,242,675, which is a continuation of Ser. No. 420,999, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 163,565, Jul. 19, 1971, abandoned. This application Mar. 17, 1982, Ser. No. 358,996
The portion of the term of this patent subsequent to Feb. 14, 1995, has been disclaimed.
Int. Cl.[3] G06F 3/02, 3/147, 9/00, 13/00
U.S. Cl. 364—900 2 Claims



1. A data processing system implemented in a large-scale-integrated semiconductor device employing insulated gate field effect transistors, comprising:

(a) a word-addressable read-only-memory array for storing fixed instruction words to control the operation of the system, the read-only-memory array being programmable in manufacture to provide a variety of different functions for systems made with said device of the same construction except for the fixed instruction words;

(b) control means connected to the read-only-memory to receive the instruction words and generate command signals;

(c) addressing means including a register coupled to said read-only-memory array for addressing the read-only-memory array to provide a sequence of instruction words for operating said system, each address of the register representing a different instruction word;

(d) data storage means including an array of read/write memory cells defining a plurality of memory locations for storing in bit-parallel format a plurality of multi-bit words of information;

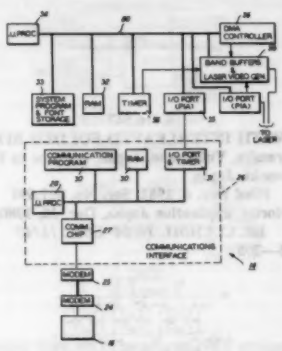
(e) bit-parallel arithmetic-logic means coupled to said control means to receive command signals and coupled to said data storage means for receiving multi-bit words from the data storage means and performing arithmetic and logic operations on said multi-bit words in accordance with the command signals to provide resulting outputs;

(f) means coupled to said data storage means and to the arithmetic-logic means and controlled by command signals from said control means for inputing selected words of said information into the arithmetic-logic means from defined memory locations in said data storage means and coupling the resulting outputs from the arithmetic-logic means to defined locations in the data storage means.

4,476,542
PRINTING SYSTEM

Peter A. Crean, Penfield; Remo J. D'Orteanzio, Rochester, and Carolyn P. Grow, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 10, 1982, Ser. No. 376,884
Int. Cl.³ G06F 3/12
U.S. Cl. 364—900 8 Claims



1. In a printer having means for encoding incremental areas across multiple print widths on a print medium to form printed characters, apparatus comprising:

means for storing digital signals corresponding to the characters to be printed in a format related to the desired position of the characters on the print medium,

means for storing a binary signal mapping corresponding to the printed appearance of a portion of the medium, wherein one binary condition corresponds to a blank incremental area on said print medium, and a second binary condition corresponds to a printed incremental area,

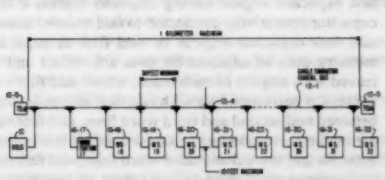
means for formatting said binary signals according to the printed appearance of successive printed portions and loading said binary signals into said means for storing the binary signal mapping, and

interface means coupled to said means for encoding to transmit print control signals corresponding to said binary signals to cause said means for encoding to print said characters.

4,476,543
CONNECTION OF A NUMBER OF WORK STATIONS TO A SINGLE CONDUCTOR COAXIAL BUS

Matthew M. Quinones, Holliston; Fred A. Mirow, Westwood, both of Mass., and Robert M. Troup, Hudson, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1982, Ser. No. 431,862
Int. Cl.³ G06F 1/00; H04B 3/00
U.S. Cl. 364—900 6 Claims



1. An interactive terminal data processing system comprises:

a single conductor coaxial bus;

a high speed link controller coupled to said bus for transmitting data bit signals over said bus; and

a plurality of work stations coupled to said bus for receiving the data bit signals from said high speed link controller and transmitting the data bit signals over said bus to said high speed link controller, the data bit signals being transferred at a predetermined bit rate and having a predetermined rise time and a predetermined fall time to reduce reflections on said bus;

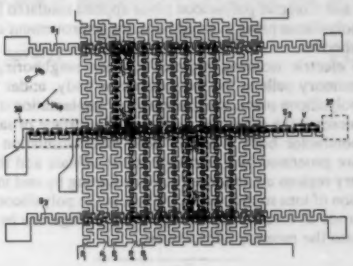
said bus having a first predetermined length and having means for coupling each of said plurality of work stations to said bus;

said coupling means including a "tee" connector coupled to said bus and a single conductor coaxial cable having a second predetermined length coupling said each of said plurality of work stations to said bus, each of said "tee" connectors being coupled to said bus being at least a predetermined distance from an adjacent "tee" connector further reducing reflections on said bus.

4,476,544
CURRENT-CONTROLLED MAGNETIC DOMAIN MEMORY

Nelie J. Wiegman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 375,151
Claims priority, application Netherlands, May 11, 1981, 8102284
Int. Cl.³ G11C 19/08
U.S. Cl. 365—19 24 Claims



1. A register for propagating cylindrical magnetic domains having centers and diameters, said register comprising:

a substantially planar magnetizable layer in which the magnetic domains are situated; and

a propagation layer on the magnetizable layer for driving the magnetic domains in the magnetizable layer, the propagation layer comprising:

an electrically-conductive conductor pattern having edges and having a longitudinal axis, said axis defining trajectories for the magnet domains, said pattern following meandering paths having meander periods; and

a plurality of control elements arranged on the longitudinal axis of the conductor pattern, two control elements per meander period, said control elements generating, in operation, potential wells in the magnetizable layer;

characterized in that:

the conductor pattern comprises a conductor having a width of approximately one domain diameter, and the conductor pattern has a meander period of approximately four domain diameters; and

the control elements generate potential wells in the magnetizable layer, each well covering an area substantially equal to the area covered by a cross-section through a magnetic domain in the plane of the magnetizable layer, said control elements being arranged to locate the potential wells to stabilize the centers of the magnetic domains

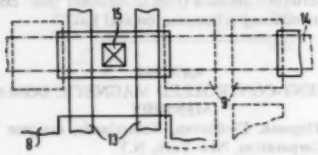
at the edges of the conductor pattern when there is no electric current flowing through the conductor pattern.

4,476,545

DYNAMIC SEMICONDUCTOR MEMORY CELL WITH RANDOM ACCESS AND METHOD FOR ITS PRODUCTION

Wolfgang Müeller, Putzbrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 27, 1981, Ser. No. 315,358
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044132
Int. Cl.³ G11C *13/00, 11/40*
U.S. Cl. 365—178 7 Claims



1. In a dynamic semiconductor memory cell with random access (RAM) having a first polysilicon which is insulated from a semiconductor body by a dielectric layer as a memory electrode for memory regions generated in the semiconductor body and a second polysilicon plane applied insulated from the first polysilicon plane as word lines, the improvement comprising wherein:

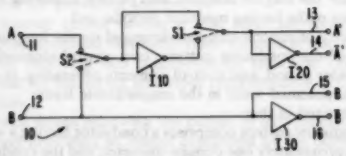
the electric isolating regions between neighboring active memory cells in the semiconductor body, under the first polysilicon plane, are generated by implantation of ions to increase the substrate doping on the surface of said semiconductor body whereby field shield insulation regions are generated by a transistor in the offstate and the memory regions are rendered self-conducting by said implantation of ions so that with a voltage at the polysilicon-1-electrode of 0 volts, the full operating voltage can be written into the memory capacitance.

4,476,546

PROGRAMMABLE ADDRESS BUFFER FOR PARTIAL PRODUCTS

Ramesh C. Varshney, San Jose, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Mar. 19, 1982, Ser. No. 360,029
Int. Cl.³ G11C *8/00, 11/34, 29/00*
U.S. Cl. 365—200 18 Claims



1. Apparatus for addressing two portions of a circuit containing at least four portions comprising:

an A address input;

a B address input;

a B address output coupled to the B address input;

a first inverter coupled to the B address input and to a $\overline{B}$ address output;

first switch means coupled to switchably connect only one of the A and B address inputs to a first node;

a second inverter connected to the first node;

second switch means coupled to switchably connect one of the first node or the second inverter to a second node;

an A address output coupled to the first node; and

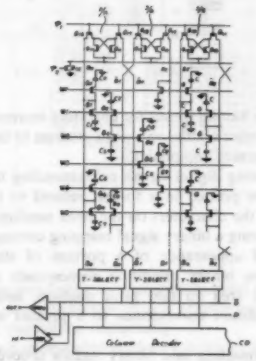
an $\overline{A}$ address output coupled through a third inverter to the second node.

4,476,547

DRAM WITH INTERLEAVED FOLDED BIT LINES

Kiyoshi Miyasaka, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 4, 1981, Ser. No. 327,691
Claims priority, application Japan, Dec. 26, 1980, 55-188934
Int. Cl.³ H01L *27/04;* G11C *11/40*
U.S. Cl. 365—205 12 Claims



10. A semiconductor memory device, comprising:

first and second sense amplifiers;

first and second bit lines operatively connected to said first sense amplifier;

third and fourth bit lines operatively connected to said second sense amplifier, said first bit line being adjacent to said third bit line, said second bit line being adjacent to said fourth bit line, and said second and third bit lines being adjacent to each other;

first through third word lines; and

first through fourth memory cells operatively connected to respective ones of said bit lines and said first through third word lines, each of said first through fourth memory cells comprise:

a transfer transistor operatively connected to the respective one of said bit lines and the respective word line; and

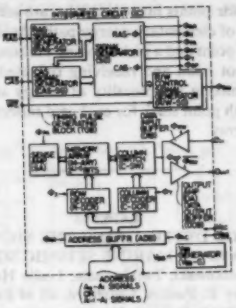
a first capacitor region having disposed therein a storage capacitor operatively connected to said transfer transistor, said first capacitor regions of said first through fourth memory cells of adjacent bit lines are shifted and interleaved with respect to each other, where said first capacitor region corresponding with said first bit line is disposed between said second and third word lines, said first capacitor region corresponding to said second bit line is disposed between said second and third word lines, said first capacitor region corresponding to said third bit line is disposed between said first and second word lines and said first capacitor region corresponding to said fourth bit line is disposed between said first and second word lines.

4,476,548

DYNAMIC TYPE MOS MEMORY DEVICE

Tetsurou Matsumoto, Koganei, and Kazuhiko Kazigaya, Fuchu, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 386,067
Claims priority, application Japan, Jun. 24, 1981, 56/96638
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—233 **3 Claims**



1. A dynamic type MOS memory device comprising:

a plurality of gate lines and a plurality of selecting switch MOSFETs which are disposed in correspondence with the respective gate lines:

a control circuit for controlling said plurality of selecting switch MOSFETs;

a plurality of resistance means which are disposed between the respective gate lines and the ground potential and each of which has a control terminal; and

an inverter circuit which receives timing signals to be applied to input side electrodes of the respective selecting switch MOSFETs and which delivers control signals to the control terminals;

wherein said timing signals are brought into a supply voltage level substantially in synchronism with completion of an operation of said control circuit.

4,476,549

CALIBRATION METHOD FOR ACOUSTIC SCATTERING MEASUREMENTS USING A SPHERICAL TARGET

Louis R. Dragonette, Upper Marlboro; Laurence J. Frank, Mt. Rainier, and Susan K. Numrich, Kensington, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1982, Ser. No. 364,098
Int. Cl.³ H04B *17/00*
U.S. Cl. 367—13 **6 Claims**

1. A method for calibrating acoustic backscattering instrumentation comprising the steps of:

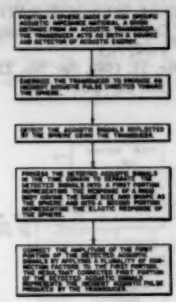
positioning a sphere made of high specific acoustic impedance material a given distance from an acoustic transducer, said transducer acting as both a source of acoustic energy and as a detector of acoustic energy;

energizing said transducer such that said transducer produces an incident acoustic pulse, said incident acoustic pulse being directed toward said sphere;

detecting acoustic signals reflected by said sphere using said transducer;

processing said detected acoustic signals in the time domain to separate said detected signals into a first portion which represents the response of a rigid body having the same size and shape as said sphere and into a second portion representing the elastic response of said sphere; and

correcting the amplitude of said first portion of said detected acoustic signals by applying a plurality of correction factors to said first portion, the resultant corrected first



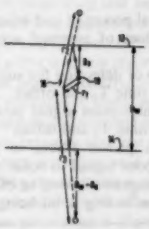
portion of said detected acoustic signals representing said incident acoustic pulse produced by said transducer.

4,476,550

DETERMINATION OF FAR FIELD SIGNATURES, FOR INSTANCE OF SEISMIC SOURCES

Antoni M. Ziolkowski, Twickenham, England, and Paul L. Stoffa, Valley Cottage, N.Y., assignors to The British National Oil Corporation, Great Britain

Filed Aug. 25, 1981, Ser. No. 296,178
Claims priority, application United Kingdom, Aug. 29, 1980, 8028018
Int. Cl.³ G01V *1/28*
U.S. Cl. 367—21 **8 Claims**



6. A method of ascertaining the far field signature of an array of sound source units in a fluid, comprising the steps of:

(a) employing an array of sound source units, each of which is small compared with the wavelength of sound generated by the unit;

(b) locating at least one sound pressure detector at a known distance from the units of the array, which distance is small compared with the wavelength of sound generated by the units but sufficiently large for the phase spectra of the pressure fields of the units to be independent of azimuth and range;

(c) locating each source unit at a known distance below the fluid surface and at a distance from the fluid floor sufficiently greater than the distance between the detector and the source unit for the reflection of the soundwave from the floor to be disregarded;

(d) generating sound pressure waves from more than one of the sound source units at a time which more than one units are located at least one wavelength of the lowest frequency of significance apart; and

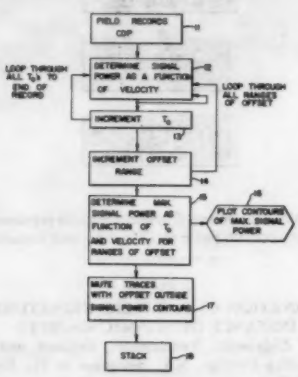
(e) deducing by summation of the individual source unit signatures detected by the at least one detector the far field signature of the array.

4,476,551

SELECTING OFFSET AS A FUNCTION OF TIME AND VELOCITY TO STACK SEISMOGRAMS WITH HIGH SIGNAL TO NOISE RATIO

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,874
Int. Cl.³ G01V 1/36
U.S. Cl. 367—43 2 Claims


FIELD RECORDS CDP
DETERMINE SIGNAL POWER AS A FUNCTION OF VELOCITY
LOOP THROUGH ALL T_0's TO END OF RECORD
LOOP THROUGH ALL RANGES OF OFFSET
INCREMENT T_0
INCREMENT OFFSET RANGE
DETERMINE MAX. SIGNAL POWER AS FUNCTION OF T_0 AND VELOCITY FOR RANGES OF OFFSET
PLOT CONTOURS OF MAX. SIGNAL POWER
MUTE TRACES WITH OFFSET OUTSIDE SIGNAL POWER CONTOURS
STACK

1. The method of suppressing noise in seismograms representing the reflection of seismic energy comprising:

obtaining seismic data from different reflecting points in the earth and from detectors each having a different offset from a common source of seismic energy along a line of exploration;

detecting the signal power of said seismograms as a function of different values of assumed acoustic velocity of the earth;

repeating the step of detecting for successive values of seismogram travel time T_o and offset;

determining the maximum signal power for each iterated value of travel time T_o and offset;

muting maximum power traces in predetermined offset ranges having poor signal to noise ratio; and

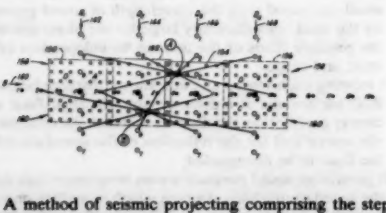
stacking the seismograms having an offset with a high signal power for the reflecting point being explored.

4,476,552

GEOPHYSICAL PROSPECTING METHODS

Kenneth H. Waters, and George W. Rice, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 228,864, Feb. 24, 1972, abandoned. This application Sep. 22, 1975, Ser. No. 615,485
Int. Cl.³ G01V 1/16, 1/20
U.S. Cl. 367—56 4 Claims



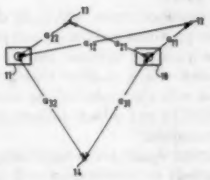
1. A method of seismic projecting comprising the steps of positioning seismic energy shot points and seismic energy receiving pickups in continuing cross patterns at or near the surface whereby said shot points are distributed linearly on an axis parallel to the prospecting direction and regularly spaced from one another and said pickups are distributed on a plurality of spaced lines perpendicular to said axis, and on each line, said pickups are distributed regularly at an interval equal to a selected integral number of shot point spacings, relating said shot points and pickups to a two-dimensional grid of seismic energy reflector points located on a sub-surface reflection stratum in the form of a quadrature array of reflector points disposed around each individual intersection of a shot point distribution axis with one of said perpendicular pickup lines such that each of said reflector points in each quadrature array will give rise to a plurality of elementary energy paths through a shot point, said reflector point and a pickup point, emitting seismic energy from each shot point and receiving reflected energy at each pickup, and mixing the plurality of energy signals to form a common depth point stack for each said reflector point in each quadrature array.

4,476,553

METHOD OF DETERMINING THE SIGNATURES OF ARRAYS OF MARINE SEISMIC SOURCES

Antoni M. Ziolkowski, Twickenham; Leslie Hatton, New Malden; Gregory E. Parkes, Guildford, all of England, and Tor-Arvid Haugland, Rukkin, Norway, assignors to The British National Oil Corporation, Great Britain

Filed May 25, 1982, Ser. No. 381,856
Claims priority, application United Kingdom, May 29, 1981, 8116527
Int. Cl.³ G01J 1/38, 1/13
U.S. Cl. 367—144 32 Claims



1. A method of determining the signature of an array of n seismic sources, comprising the steps of:

providing an array of n marine seismic sources as the array of n seismic sources, and providing n hydrophones for measuring the emitted pressure wave;

actuating the array of n seismic sources;

measuring the emitted pressure wave at n independent points whose positions are known with respect to the array;

processing the measurements so as to produce n equivalent signatures of the n sources taking into account the interactions therebetween, said processing step comprising

forming n simultaneous equations

$$h_i(t) = S_i \sum_{j=1}^{n} \frac{1}{a_{ij}} P_j\left(t - \frac{a_{ij}}{c}\right)$$

$$i = 1, 2, \ldots, n.$$

where $h_i(t)$ is the signal provided by the i th hydrophones, S_i is the sensitivity of the i th hydrophone, a_{ij} is the distance between the i th hydrophone and the j th seismic source, c is the speed of sound in water, t is time, and P_j (t) is the equivalent signature of the j th seismic source, and

solving the n simultaneous equations for $P_{j(t)}$ where j = 1, 2, . . . , n; and

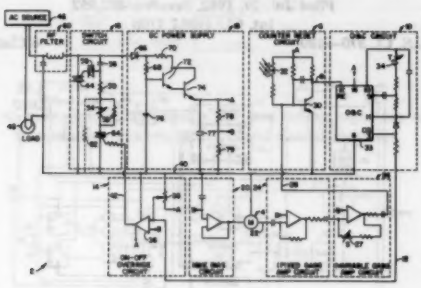
providing the signature of the array by superposing the n equivalent signatures.

4,476,554

SOUND ACTUATED LIGHT SWITCH

Blaine M. Smith, and James A. Taylor, both of Beaverton, Oreg., assignors to Jonathan Ehrenreich, Ehrenreich Electronics, New York, N.Y.

Continuation of Ser. No. 273,570, Jun. 16, 1981, Pat. No. 4,408,308. This application Jul. 21, 1983, Ser. No. 516,223
The portion of the term of this patent subsequent to Nov. 4, 2000, has been disclaimed.
Int. Cl.³ G08B *13/22*; H01H *36/00, 35/24*; H04Q *1/18*
U.S. Cl. 367—197 11 Claims



1. A switch connected in series with and between an alternating current power source and a load for actuation of the load upon receipt of an audible external stimulus comprising:

a direct current power supply connected to said alternating current power source and having at least one direct current output;

means for sensing said audible external stimulus and producing a first electrical signal representative of the stimulus at a first output thereof;

a reset circuit means having a reset circuit input electrically coupled to the first output for producing a reset signal at a reset output when the electrical signal at the reset circuit input exceeds a chosen level;

timing means coupled to the reset output for providing on and off control signals at a control output, said on control signal provided during receipt of the reset signal and for a first period of time after said reset signal ceases, said off control signal provided thereafter;

said timing means further comprising an electronic oscillator means for producing an oscillating signal and an electronic counter coupled to the oscillator means and having a reset input coupled to the reset output and adapted to begin a count cycle by counting oscillations of the oscillating signal starting at a first count upon receipt of said reset signal, said counter means including means for producing an on control signal at a counter upon receipt of said reset signal and an off control signal after the electronic counter reaches a certain count corresponding to a predetermined time interval during which said reset signal is not received; and

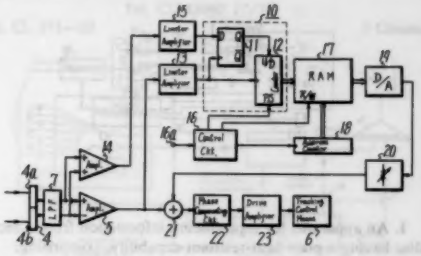
connecting switch means, having a switch input connected to said control output and being responsive to said control signal, for electrically connecting the alternating current power source to the load when the on control signal is present.

4,476,555

TRACKING SERVO APPARATUS FOR AN OPTICAL INFORMATION REPRODUCING SYSTEM

Yoshiro Joichi, Tokyo, and Hiroshi Ohki, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 299,537, Sep. 4, 1981, abandoned. This application Sep. 26, 1983, Ser. No. 534,931
Claims priority, application Japan, Sep. 12, 1980, 55-126877
Int. Cl.³ G11B *21/10*
U.S. Cl. 369—44 10 Claims



1. A tracking control apparatus for an optical information reproducing system in which a light beam for reading the information is incident on a signal record surface of a recording carrier on which a substantially circular record track is formed, comprising:

photo-detector means including first and second portions for detecting said light beam from said recording carrier and generating respective first and second outputs, and means for generating from said first and second outputs an information signal and a first tracking error signal indicative of deviations of beam position relative to the center of said record track, said information signal being the sum of said first and second outputs and said first tracking error signal being the difference between said first and second outputs;

tracking control means receiving said first tracking error signal for controlling the transverse position of said light beam with respect to said center of said record track;

measuring means for generating a digital second tracking error signal indicative of any eccentricity of said recording carrier during at least one revolution of said recording carrier, said measuring means including delayed flip-flop means with a delayed input terminal, a clock input terminal and an output terminal and providing an output signal at said output terminal, a preset up/down counter having a clock input terminal, an up/down switching control terminal and an output terminal and providing an output signal at said output terminal, said information signal from said photo-detector means being supplied to said delayed input terminal of said delayed flip-flop means, said first tracking error signal from said photo-detector means being supplied to said clock input terminals of said delayed flip-flop means and said up/down counter, said output signal of said delayed flip-flop means being supplied to said up/down switching control terminal of said counter;

memory means receiving said output of said counter for storing said digital second tracking error signal;

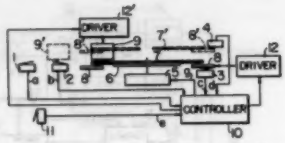
means for converting said digital second tracking error signal from said memory means to an analog signal; and

means for supplying said analog signal from said means for converting to said tracking control means to adjust said beam position in response thereto.

4,476,556
APPARATUS FOR REPRODUCING INFORMATION FROM A RECORD DISC

Hayashi Nagami, Yamato; Yoshisada Taniguchi, Fujisawa; Shinpei Otsu, Yokohama; Toshio Fujimura, Fujisawa, and Keizo Shimizu, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 429,007
Claims priority, application Japan, Oct. 5, 1981, 56-157499
Int. Cl.³ G11B 25/04
U.S. Cl. 369—258 11 Claims



1. An apparatus for reproducing information from a record disc having a poor heat-resistant capability, comprising:

turntable means for carrying said record disc for reproduction of information;

motor means for rotating said turntable means;

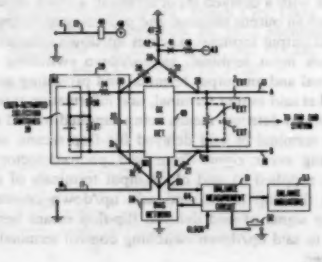
means for loading said turntable means with said record disc and for unloading said turntable means to detach said record disc from said turntable means; and

means coupled to said loading and unloading means for causing said motor means to operate to rotate said turntable means while said turntable means does not carry said record disc except when said loading and unloading means is loading said record disc onto said turntable means and detaching said record disc therefrom, whereby the rotation of said turntable means causes air within said reproducing apparatus to be circulated for suppressing a possible temperature rise of the atmosphere around said record disc while said reproducing apparatus is made ready for a reproducing operation.

4,476,557
DUPLEX SIGNALING CIRCUIT

George Knoedl, Jr., Mount Pleasant, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 13, 1982, Ser. No. 407,812
Int. Cl.³ H04B 1/58
U.S. Cl. 370—28 15 Claims



1. A duplex signaling circuit comprising

a hybrid coupling bridge including an input signaling connection and a conjugate output signaling connection, said bridge further including a line circuit connection coupled through said bridge to receive signals from said input signaling connection and to send signals to said output signaling connection,

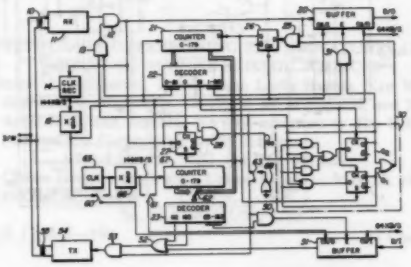
means, including a voltage divider, for biasing a portion of said bridge to a predetermined reference voltage, and

means for connecting a predetermined portion of said bridge in series in said biasing means voltage divider.

4,476,558
TIME COMPRESSION MULTIPLEX DIGITAL TRANSMISSION SYSTEM

Ephraim Arnon, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 29, 1982, Ser. No. 402,952
Int. Cl.³ H04J 3/06
U.S. Cl. 370—100 4 Claims



1. In a digital transmission sytem, comprising:

means for transmitting burst of digital signals of fixed length at fixed frame intervals, each burst including initial and final synchronization bits at the beginning and ending respectively of each burst; and

means for receiving the bursts of digital signals, including means for establishing frame synchronization:

the improvement comprising in the receiving means:

gating means responsive to the absence of frame synchronization for passing all received signals to the means for establishing frame synchronization; and responsive to the presence of frame synchronization for passing only signals received during a window period which is coextensive with that of said bursts, the means for establishing frame synchronization.

4,476,559
SIMULTANEOUS TRANSMISSION OF VOICE AND DATA SIGNALS OVER A DIGITAL CHANNEL

Stephen J. Brolin, Livingston, and Ralph W. Wyndrum, Jr., Bernards Township, Somerset County, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

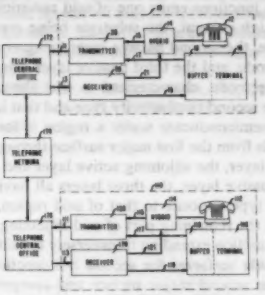
Filed Nov. 9, 1981, Ser. No. 319,690
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.1 13 Claims

1. A method for the transmission of information in any one of three modes, said modes being digitally encoded voice signals, data signals, or a combination of said digitally encoded voice signals and said data signals, over a single, bidirectional digital transmission channel interconnecting first and second customer locations by the steps of

(1) selecting said information transmission mode,

(2) initiating said transmission,

(3) providing a unique digital signature for identifying each of said information modes, and



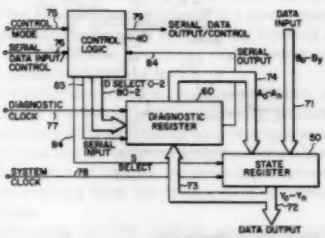
(4) multiplexing said signals and said unique signature for transmission between said first and second locations.

4,476,560

DIAGNOSTIC CIRCUIT FOR DIGITAL SYSTEMS

Warren K. Miller, Hayward; Michael J. Miller, San Jose, and John M. Birkner, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif. and Monolithic Memories, Inc.

Filed Sep. 21, 1982, Ser. No. 420,679
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—15 18 Claims



1. A circuit for the selective introduction and removal of digital signals into and from a digital signal path comprising

control means,

first means connected in said signal path and responsive to said control means, for selectively holding signals of said path,

second means connected by a first input-output means to said first means and responsive to said control means for selectively holding signals from said first means and releasing signals to said first means, said second means having a second input-output means for selectively accepting digital signals and for selectively sending digital signals,

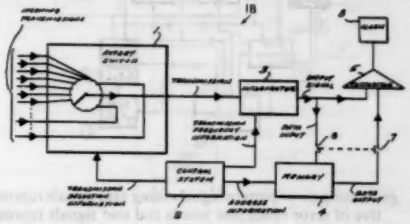
whereby digital signals may be inserted into said signal path and removed from said signal path through said second input-output means.

4,476,561

DEVICE FOR REMOTELY SUPERVISING OPERATION OF A BRANCHED DATA-TRANSMISSION NETWORK

Dirk Baackmann, Lauf; Georg Hecht, Nuremberg; Johann Schlagenhaft, Nuremberg, and Karl Schnell, Nuremberg, all of Fed. Rep. of Germany, assignors to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 134,924, Mar. 28, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,140
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913402
Int. Cl.³ G06F *11/30*
U.S. Cl. 371—25 3 Claims



1. A device for remotely supervising operation of a data transmission network which contains a plurality of subnetworks branching from one another, comprising

a plurality of transmitters operatively connected to individual locations in respective sub-networks and each operating at an assigned characteristic frequency;

means for scanning in consecutive scanning cycles characteristic frequencies of respective transmitters whereby all said characteristic frequencies are scanned during each of said consecutive scanning cycles;

means connected to said scanning means for interpreting the scanned responses of respective transmitters as to the presence or absence of the characteristic frequency thereof;

means connected to said interpreting means for storing at separate storing locations the successive responses interpreted in one scanning cycle;

means connected to said storing means and to said interpreting means for comparing the responses stored during the one scanning cycle with responses interpreted during the subsequent scanning cycles; and

means connected to said comparing means for signalling differences between the stored responses and the subsequent responses to determine, according to the storing locations, the operational conditions of the supervised sub-networks.

4,476,562

METHOD OF ERROR CORRECTION

Yoichiro Sako, and Kentaro Odaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 283,924, Jul. 16, 1981, abandoned. This application Sep. 28, 1983, Ser. No. 536,824
Claims priority, application Japan, Jul. 18, 1980, 55-99258; Jul. 23, 1980, 55-100814
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—39 23 Claims

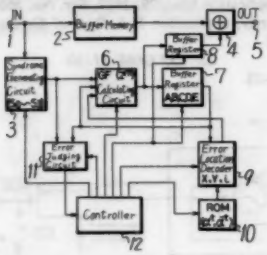
1. A method for use in detecting and correcting errors in received digital data signals formed of data words and error check words, comprising the steps of:

generating a plurality of signals representative of error syndrome words by multiplying a block of received data signals with a parity check matrix;

generating a plurality of signals representative of error con-

stant words from said plurality of generated signals representative of error syndrome words;

determining whether errors exist in said received digital data signals by checking preselected equalities or inequalities among said generated signals representative of error syndrome words and said generated signals representative of error constant words and producing indication signals representative of the existence of such errors;



generating error pattern signals using said signals representative of error syndrome words and said signals representative of said error constant words for locating any indicated errors in response to said indication signals representative of the existence of errors; and

correcting located errors in the received digital data signals using said generated error pattern signals.

4,476,563

SEMICONDUCTOR LASER HAVING AT LEAST TWO RADIATION BEAMS, AND METHOD OF MANUFACTURING SAME

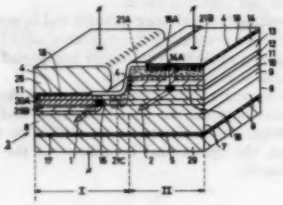
Lodewijk J. Van Ruyven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,502

Claims priority, application Netherlands, Mar. 23, 1981, 8101409

Int. Cl.³ H01S 3/19

U.S. Cl. 372—50 **13 Claims**



1. A semiconductor laser device for generating at least two radiation beams which are substantially parallel to each other, comprising a semiconductor wafer having a first and a second major surface and comprising, between said major surfaces and beside each other, at least a first part and an adjoining second part, which semiconductor wafer is further bounded by two substantially parallel reflecting side surfaces extending perpendicularly to the direction of the radiation beams and comprises a substrate of a first conductivity type adjoining the second major surface, on which substrate are provided successively a first passive layer of the first conductivity type, a first active layer and a second passive layer, which layers, together with the substrate, extend in both parts of the semiconductor wafer, and only in said second part there is provided on the second passive layer successively a second active layer and a third passive layer, each active layer being provided between passive layers having a larger forbidden band gap, the first active layer comprising a p-n junction in said first part and the second active layer comprising a p-n junction in said second part, each of which p-n junctions emits one of said radiation beams at a sufficiently high current, the substrate being connected to a first electrode, the second passive layer being connected to a second electrode, and the third passive layer being connected to a third electrode, characterized in that the third passive layer is of the second conductivity type and that in one of said parts of the semiconductor wafer a region is formed locally which extends from the first major surface through the uppermost passive layer, the adjoining active layer and a part of the underlying passive layer, the three layers all having the same conductivity type opposite to that of said region, said region forming with the remaining part of said adjoining active layer the first p-n junction extending transversely to said active layer and to said side surfaces, the second p-n junction extending parallel to the second major surface and comprising a strip-shaped active region also extending transversely to the side surfaces.

4,476,564

GAS EXHAUST NOZZLE FOR ARC FURNACES

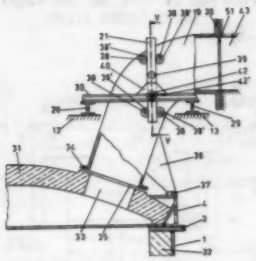
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 23, 1982, Ser. No. 410,581

Claims priority, application Switzerland, Sep. 1, 1981, 5615/81

Int. Cl.³ F27D 3/10

U.S. Cl. 373—9 **5 Claims**



1. An arc furnace comprising:

a furnace shell having a top opening;

a removable lid covering said top opening, said lid including a lid ring and a lid opening;

a flue gas exhaust nozzle having one end positioned adjacent said lid opening for exhausting flue gases from said furnace;

means for lifting and swivelling said lid; and

means for supporting said nozzle on said lid ring;

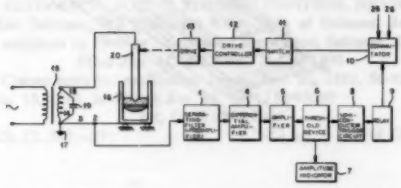
wherein said nozzle includes guide means for guiding said nozzle when said lid is lifted and swivelled by said lid lifting and swivelling means, comprising a stationary element, at least one pair of rollers connected to one of said nozzle and said stationary element, and at least one guide rail extending in the direction of movement of said lid, said guide rail cooperating with said rollers and being fixed to the other of said nozzle and said stationary element.

4,476,565

METHOD AND SYSTEM FOR CONTROL OF THE ELECTROSLAG REMELTING

Tzolo V. Rashev, Sofia; Lyudmil K. Valkov, Pernik; Ivanka A. Rasheva, Sofia; Stoyan M. Stoyanov, Sofia; Danail K. Kossev, Sofia, and Yordan G. Lambev, Sofia, all of Bulgaria, assignors to Institute Po Metaloznanie I Technologia Na Metalite, Sofia, Bulgaria

Filed Nov. 9, 1982, Ser. No. 440,321
Int. Cl.³ H05B 7/148
U.S. Cl. 373—50 3 Claims



2. An apparatus for controlling an electroslag remelting operation in which an electrode is lowered into a slag layer atop a metal to be mounted in an electroslag mounting furnace and an electric current is passed between said electrode and the furnace to melt the metal therein, said apparatus comprising:

(a) a secondary winding connected between said electrode and said furnace for passing an electroslag remelting current therethrough;

(b) a drive operatively connected to said electrode for lowering the same into said slag whereby the electroslag remelted in said furnace proceeds in a no-arc mode when said electrode is between two limiting levels of the slag layer in said furnace but arcing occurs when said electrode passes said limiting levels;

(c) a condenser connected across said secondary winding, one end of said secondary winding being grounded;

(d) a separating filter provided with a preamplifier and having an input connected between said end of said secondary winding and said furnace for detecting electromagnetic signals resulting from the development of arcing at said electrode;

(e) a differential amplifier and an amplifier connected in series to an output of said separating filter for providing a control signal from said electromagnetic signals;

(f) a threshold device connected to said amplifier and responsive to the passage of said control signal through a limiting value, a signal strength indicator being connected to said threshold device;

(g) a semiconductor trigger circuit connected to said threshold device and a relay threshold device, said semiconductor trigger circuit responding to said threshold device;

(h) a commutator connected to said relay for electronically switching the relay signal in dependence upon the limit traversed by said electrode; and

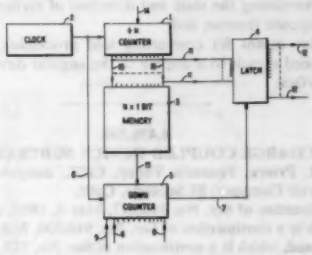
(i) a switch in series with said commutator and acting upon a drive controller to control said drive and vary the speed of said electrode to maintain the same substantially between said limits.

4,476,566

FREQUENCY HOPPING RADIO COMMUNICATIONS APPARATUS HAVING PSEUDO-RANDOM CHANNEL SELECTION

Paul W. Dent, Hampshire, England, assignor to The Marconi Company Limited, England

Filed Jun. 8, 1982, Ser. No. 386,296
Claims priority, application United Kingdom, Jun. 19, 1981, 8118954
Int. Cl.³ H04B 7/12; H04J 6/00
U.S. Cl. 375—1 9 Claims



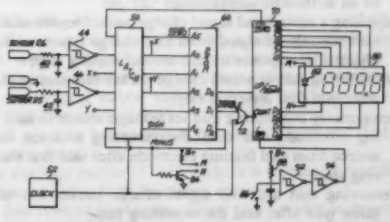
1. Frequency hopping radio communications apparatus having selection circuitry for providing in psuedo-random order a sequence of multi-digit signals identifying n channels selected from N possible channels comprising a first counter responsive to clock signals to provide a series of multi-digit signals identifying each of the N possible channels, electronic latching means the input of which receives the multi-digit signals from said first counter and which is arranged to provide a multi-digit signal at its output corresponding to the multi-digit signal present at its input each time the latching means is enabled, a store which is addressed by said multi-digit signals from said first counter and which is arranged to provide a first signal whenever said multi-digit signals from said first counter identify one of the n channels, and a second counter which is responsive to the first enabling signals to count the clock pulses supplied to said first counter and which is arranged on reaching a predetermined value of the count to provide a second enabling signal to the latching means to latch its output to the multi-digit signal then present at its input.

4,476,567

ELECTRONIC PROTRACTOR

Roger F. Johnson, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 11, 1981, Ser. No. 329,771
Int. Cl.³ G06M 3/14
U.S. Cl. 377—24 8 Claims



1. Apparatus for measuring the angular deflection of a surface from a reference position comprising:

encoding means for producing a pair of phase quadrature

signals representative of angular deflections of the surface from the reference position;

processing means for processing said pair of phase quadrature signals and producing output signals representative of the angular deviation and direction of rotation of the surface from said reference position,

said processing means including:

clock means for producing a clock signal;

signal storage means for storing the value of each of said quadrature signals at successive clock signals;

logic means for comparing present quadrature signal values with stored quadrature signal values and predeterminedly determining the state and direction of surface rotation in response thereto; and

display means for converting said processing means produced signals to a display of the angular deviation of the surface.

4,476,568

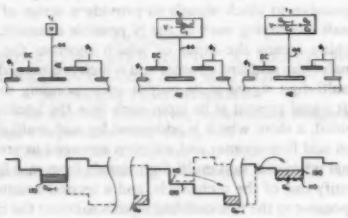
CHARGE COUPLED DEVICE SUBTRACTOR

Paul R. Prince, Fountain Valley, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 146,997, May 6, 1980, abandoned, which is a continuation of Ser. No. 910,034, May 26, 1978, abandoned, which is a continuation of Ser. No. 723,356, Sep. 15, 1976, abandoned. This application Jan. 12, 1981, Ser. No. 223,966

Int. Cl.³ G11C *19/28*; H01L *29/78*

U.S. Cl. 377—60 **11 Claims**



1. In a charge transfer device formed in a semiconductive substrate having an electrical surface potential, a charge flow channel, a floating electrode overlying said channel, a sense well in said surface potential beneath said floating electrode and a set voltage source, a method for information signal subtraction, comprising:

sensing a first external information signal corresponding to an arithmetic minuend;

injecting a minuend signal charge packet representative of said minuend signal from said charge injector into said channel in response to said first sensing step;

sensing a second external information signal representative of an arithmetic subtrahend;

injecting a subtrahend signal charge packet representative of said subtrahend signal from said charge injector into said channel in response to said second sensing step;

transferring said minuend charge packet into said sense well after said first injection step;

temporarily connecting said set voltage source to said floating electrode and then disconnecting said set voltage source from said floating electrode after said first transferring step;

removing said minuend signal charge packet out of said sense well after said disconnecting step;

second transferring said subtrahend charge packet into said sense well after said removing step; and

measuring the voltage potential of said floating electrode after said second transferring step, wherein said second sensing and injecting steps are performed after said first sensing and injecting steps and before said second transferring step.

4,476,569

X-RAY FIELD DEFINING MASK

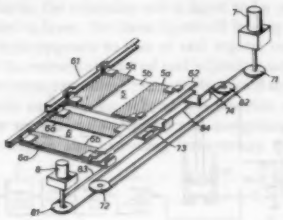
Yoshimasa Ogo, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 10, 1982, Ser. No. 440,618

Claims priority, application Japan, Jan. 27, 1982, 57-11207

Int. Cl.³ A61B *6/00*

U.S. Cl. 378—175 **8 Claims**



1. An X-ray field defining mask for a spot film device adapted for use with an X-ray table, said spot film device having a mask driving means by which said X-ray field defining mask may be translated between a parked or a film loading and unloading position and a radiographic active position where an X-ray beam from an X-ray source may impinge on said mask, comprising:

X-ray transparent plate means which is transparent to X-rays for transmitting X-rays; and

X-ray shielding plate means disposed adjacent said transparent plate means and made of an X-ray shielding material for blocking the passage of the X-ray beam from said X-ray source to an X-ray film thereby to define an X-ray field in conjunction with said transparent plate means.

4,476,570

DATA PROCESSING APPARATUS WITH COMBINED VOICE SOUND REPRODUCING DEVICE AND VISUAL DISPLAY

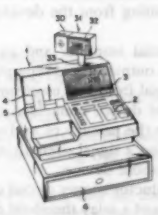
Tetsuo Ootsuka, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 253,037, Apr. 10, 1981,. This application Aug. 19, 1983, Ser. No. 525,253

Claims priority, application Japan, May 12, 1980, 55-62397

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—51 **6 Claims**



1. A voice sound producing electronic data processing apparatus comprising in combination:

a main body including a keyboard and a central processing unit coupled to said keyboard;

a sub-body including a display device and a voice sound outputting device; said display device having a visual display surface and displaying input data keyed in from

said keyboard and operation result data resulting from an arithmetic operation performed by said central processing unit; and said voice sound outputting device having a loudspeaker which is fixed with said display device such that said loudspeaker faces in the same direction as said visual display surface and means coupled to said loudspeaker and being responsive to said input data and operation result data for generating said input data and operation result data as respective voice sounds from said loudspeaker; and

supporting means for rotatably supporting said sub-body on said main body, said supporting means including a supporting column provided on said main body.

4,476,571

AUTOMATIC SOUND VOLUME CONTROL DEVICE

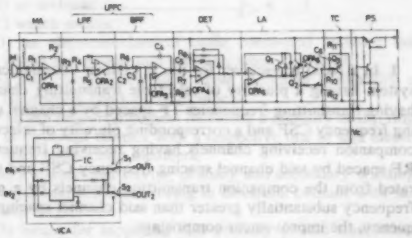
Akio Tokumo, and Masayuki Kato, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Saitama, Japan

Filed Jun. 14, 1982, Ser. No. 387,895

Claims priority, application Japan, Jun. 15, 1981, 56-92893; Jun. 15, 1981, 56-92894; Jun. 15, 1981, 56-93307

Int. Cl.³ H04B *1/16*

U.S. Cl. 381—57 **14 Claims**



1. In an automatic sound volume control device wherein environmental noise is detected as a noise level signal with a microphone (M) and a detecting circuit (DET), said noise level signal controls the gain of a sound amplifier (VCA) that amplifies a sound input signal into a sound output signal, the improvement comprising:

a logarithmic amplifier section (LA) for logarithmically compressing said noise level signal;

a time constant circuit (TC) receiving an output of said logarithmic amplifier section as an input thereof, the gain of the sound amplifier being controlled according to an output of said time constant circuit; and

means for adjusting the gain of said logarithmic amplifier section for obtaining a non-linear relationship between said noise level signal and said sound output signal.

4,476,572

PARTITION SYSTEM FOR OPEN PLAN OFFICE SPACES

Thomas R. Horrall, Harvard, and Parker W. Hirtle, Lexington, both of Mass., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Sep. 18, 1981, Ser. No. 303,496

Int. Cl.³ H04R *3/00*; H04K *3/00*

U.S. Cl. 381—73 **10 Claims**

10. A partition system for open plan office spaces, said system comprising:

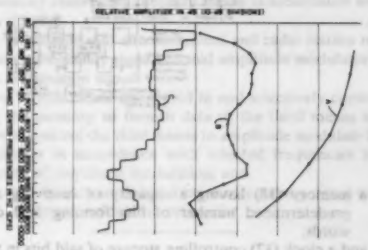
a plurality of vertical partition panel segments, each segment comprising a flat central core constructed of a hard dense material and faced on each side with a porous sound absorbing material, a plurality of said panel segments including at least one speaker mounting aperture adjacent floor level;

mounted in each of said apertures, a loudspeaker assembly providing essentially similar front and back acoustic radiation characteristics, said loudspeaker assembly being aimed horizontally along the floor;

a pseudo-random number generator including a clocked shift register having a multiplicity of stages and feedback derived from at least a pair of said stages;

a plurality of gate means, each operative to combine a respective pair of signals obtained from different stages of said shift register thereby to generate at least three separate broadband noise signals, said broadband noise signals being incoherently related as to significant frequencies within the masking spectrum;

for each of said broadband noise signals, a respective filter



for adjusting the spectrum in accordance with the frequency response characteristic of the loudspeaker assemblies to produce, in the office space adjacent the respective panel, an acoustic spectrum for speech privacy masking; and

means for applying each of said signals to energize a respective speaker assembly radiating into each space enclosed by said panels, so that a plurality of different signals are radiated into each such space, whereby an essentially uniformly distributed masking field is created in each such space which minimizes perceptible acoustic patterns in said field that cause the positions of said loudspeaker assemblies to be apparent.

4,476,573

RADIO LINK REMOTE CONTROL SIGNALING SYSTEM, AND METHOD

Hans Duckeck, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,688

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144289

Int. Cl.³ H04B *1/00, 1/16*

U.S. Cl. 455—45 **13 Claims**

1. Remote control system having a radio transmition link on which a signal comprising program information and binary control information is being transmitted between a transmitting station and a receiving station on an ultra-high frequency carrier,

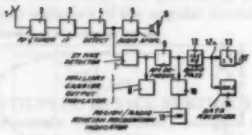
said program information is frequency modulated (FM) on the carrier,

an auxiliary carrier (57 kHz) which is frequency modulated on said ultra-high frequency carrier,

a first control modulating signal (AR) which is amplitude modulated (AM) on the auxiliary carrier, and adapted for effecting receiver switching with long switching response time characteristics,

a second control modulating signal which is AM modulated on the auxiliary carrier in the form of a predetermined

number of bits, forming command words, which have a repetition rate such that the command words are short with respect to said switching response time of said long switching response time characteristic, said receiving station comprising a detector for detecting said auxiliary carrier, a demodulator coupled to said detector for providing said first and second control modulating signals, a data receiver (14) connected to said demodulator to receive the first and the second control modulating signals, and having means for responding only to the second of the control modulating signals comprising



a memory (15) having a capacity of receiving only said predetermined number of bits forming said command words;

and a clock (17) controlling storage of said bits in the memory, said clock having a repetition rate which is capable of controlling storage of said number of bits in the memory during a time less than said switching time, and means (18*a*) for blocking storage of information in said memory for a period of time which exceed said switching response time.

4,476,574

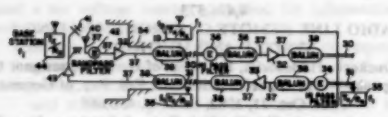
RADIO FREQUENCY COMMUNICATION SYSTEM UTILIZING RADIATING TRANSMISSION LINES

Warren C. Struven, San Carlos, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 187,914, Sep. 17, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,785

Int. Cl.³ H04B 1/00, 7/00

U.S. Cl. 455—55 **25 Claims**



1. A radio frequency communicating system comprising a first radiating transmission line having a proximate end and a distal end, said first transmission line including a unidirectional amplifier therein for amplifying a radio frequency signal from said proximate end to said distal end of said first transmission line, a second radiating transmission line spaced from said first transmission line having a proximate end and a distal end and substantially coextensive with said first transmission line thereby establishing a given radio frequency coupling loss between said radiating transmission lines, said second transmission line including a unidirectional amplifier therein for amplifying a radio frequency signal from said distal end to said proximate end of said second transmission line, a radio frequency transmitter coupled to at least one of said first and second transmission lines by electromagnetic wave propagation in space and a radio frequency receiver coupled to at least the other of said first and second transmission lines by electromagnetic wave propagation in space; said unidirectional amplifiers of said first and second transmission lines having a gain less than the coupling loss between said first and second transmission lines.

4,476,575

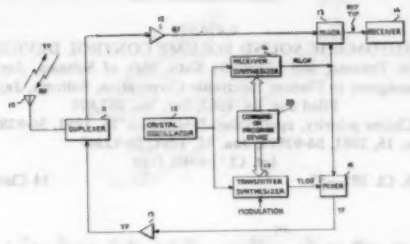
RADIO TRANSCEIVER

Earnest A. Franke, Goode, and Frederick J. Highton, Lynchburg, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Dec. 13, 1982, Ser. No. 449,543

Int. Cl.³ H04B 1/50

U.S. Cl. 455—76 **6 Claims**



1. In a radio transceiver for use in cellular communication system having a plurality of selectable transmitting channels having transmitting frequencies TF spaced by a channel spacing frequency CSF and a corresponding plurality of selectable companion receiving channels having receiving frequencies RF spaced by said channel spacing frequency CSF and separated from the companion transmitting channels by a given frequency substantially greater than said channel spacing frequency, the improvement comprising:

a. input means for said receiving frequencies RF;

b. first means for producing a selected receiving local oscillator frequency RLOF;

c. a first mixer coupled to said input means and to said first means and responsive to a selected receiving frequency RF and said selected receiving local oscillator frequency RLOF for producing a receiving intermediate frequency RIF;

d. second means for producing a selected transmitting local oscillator frequency TLOF;

e. a second mixer coupled to said first means and to said second means and responsive to said selected receiving local oscillator frequency RLOF and said selected transmitting local oscillator frequency TLOF for producing a selected transmitting frequency TF that is a companion to said selected receiving frequency RF;

f. means for preventing the transmitter channel frequency from introducing undesirable audible beat notes in the transceiver as a result of drift in the frequency of said RLOF, TLOF or RF comprising means coupled to said first and second means for providing that said selected receiving local oscillator frequency RLOF and said selected transmitting local oscillator frequency TLOF have values such that said receiving intermediate frequency RIF which is equal to the difference between said receiving local oscillator frequency RLOF and said selected receiving frequency RF and a transmitting intermediate frequency TIF which is equal to the difference between said selected receiving frequency RF and said selected transmitting frequency TF, are spaced apart by a frequency spacing equal to or greater than one channel spacing frequency CSF;

g. and output means coupled to said first mixer for substantially rejecting frequencies spaced from said receiving intermediate frequency RIF by said frequency spacing.

4,476,576
VLF COMMUNICATION SYSTEM

Myron S. Wheeler, Baltimore, and Glenn R. Beach, Columbia, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

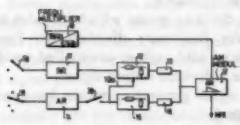
Filed Sep. 30, 1982, Ser. No. 429,359
Int. Cl.³ H04B 1/03; H01Q 1/22
U.S. Cl. 455—97 7 Claims

1. A VLF communication system comprising:
(A) a VLF transmitter;
(B) an aerostat;
(C) winch means;
(D) an electromechanical cable connected between said winch means and said aerostat, when deployed;
(E) said electromechanical cable including a plurality of electrically conducting members;
(F) a slip ring arrangement including a plurality of slip rings in electrical contact with a respective one of said electrically conducting members;
(G) a transformer having primary and secondary windings with said secondary being in electrical contact with said slip rings;
(H) means for supplying said primary of said transformer with electrical energy;
(I) means connecting said transmitter to said slip rings so as to be in electrical contact with said electrically conducting members.

4,476,577
RADIO TRANSMITTER SYSTEM WITH SPECIAL PROGRAM IDENTIFICATION

Uwe Mätzold, Salzgitter, and Dieter Heiss, Hildesheim, both of Fed. Rep. of Germany, assignors to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,443
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3144943
Int. Cl.³ H04B 1/04
U.S. Cl. 455—102 9 Claims

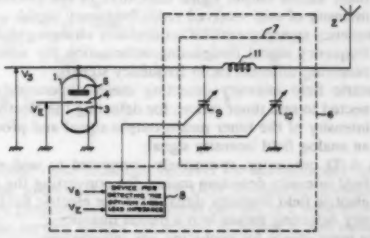


1. A radio transmission system for transmitting a carrier frequency signal frequency modulated by an information amplitude modulated subcarrier frequency signal, comprising:
first means for supplying a base frequency signal,
second means responsive to said first means for generating a subcarrier frequency signal in a non-audible frequency band
an amplitude modulator coupled to said second means for amplitude modulating the subcarrier frequency signal with an information signal;
third means responsive to said second means for generating an announcement recognition frequency signal and a radio station recognition frequency signal;
a memory coupled to said third means and having stored therein data representative of
(1) the frequency of the announcement recognition frequency signal;
(2) the frequency of the radio station recognition frequency signal;
(3) the degree of amplitude modulation of the subcarrier for the announcement recognition frequency signal, and
(4) the degree of amplitude modulation of the subcarrier for the radio station recognition frequency signal;
said memory controlling the third means in accordance with data therein;
means to provide said announcement and radio station recognition frequency signals to said amplitude modulator as said information signal;
selector switch means connected to and selectively controlling the memory to furnish data to the third means and thereby control the third means to amplitude modulate the subcarrier in accordance with selected frequencies and degrees of amplitude modulation; and
means to frequency modulate a carrier frequency signal with said amplitude modulated subcarrier.

4,476,578
DEVICE FOR DETECTING THE OPTIMUM ANODE LOAD IMPEDANCE OF A TUBE TRANSMITTER IN A HIGH FREQUENCY TRANSMISSION CHAIN

Daniel Gaudin, and Philippe Le Gars, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 22, 1982, Ser. No. 443,635
Claims priority, application France, Nov. 27, 1981, 81 22274
Int. Cl.³ H04B 17/00, 1/04; H03H 7/38
U.S. Cl. 455—115 4 Claims

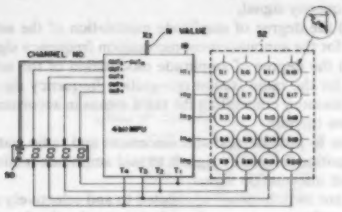


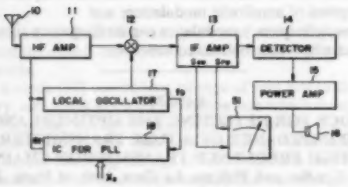
1. A device for detecting the optimum anode load impedence of a transmitter tube in a high frequency transmitting chain, this transmitting chain comprising besides the tube, a transmitting antenna, the device comprising a variable impedence matching cell interposed between the tube and the transmitting antenna, said cell detecting said optimum anode load impedence of said tube, by detecting, from an input and an output voltage of said tube, during the variation of the impedence presented to said anode of said tube by said matching cell, a passing of said anode load impedence through a pre-determined purely resistive value; said cell comprising means for phase shifting by $k(\pi/2)$(with k being a positive or negative uneven integer) the phase difference between said input and output voltages of said tube, means for multiplying by each other the two voltages thus processed, and means for calculating the mean value of the product thus obtained, and for cancelling this mean value, during the variation of the impedence matching cell corresponding to the passing of the anode load impedence through a purely resistive value.

4,476,579
ELECTRONIC TUNING RADIO RECEIVER

Tatsuo Ito; Kazuyuki Hoda, both of Kobe, and Masataka Mizuno, Akashi, all of Japan, assignors to Fujitsu Ten Limited, Kobe, Japan

Filed Oct. 28, 1982, Ser. No. 437,200
Claims priority, application Japan, Oct. 29, 1981, 56-173583
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—147 **7 Claims**





1. An electronic tuning type radio receiver equipped with a spectrum analyzer display function, comprising:

tuner means responsive to a received radio frequency signal and radio frequency designating information to provide a tuner means output signal indicative of the electric field intensity of said received radio frequency signal;

frequency sweep means for sequentially changing said radio frequency signal designating information for selectively receiving different radio frequency signals;

electric field intensity detecting means, operatively connected to said tuner means, for detecting the electric field intensity of the tuner means output signal and producing an analog field intensity signal;

an A/D converter, operatively connected to said electric field intensity detecting means, for converting the analog electric field intensity signal from the electric field intensity detecting means into a digital quantity;

key input means for providing key information;

received signal frequency vs. electric field intensity distribution producing means, operatively connected to said A/D converter, said frequency sweep means and said key input means, for operating said frequency sweep means to sequentially change the radio frequency signal designating information for selectively receiving different radio frequency signals when said key information from said key input means is provided and for producing a received signal frequency vs. electric field intensity distribution in response to both sequentially read out digital outputs from said A/D converter during the information changing operation of said frequency sweep means and radio frequency output data from said frequency sweep means;

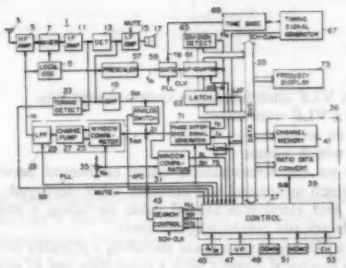
storage means, operatively connected to said received signal frequency vs. electric field intensity distribution producing means, for storing the received signal frequency vs. electric field intensity distribution; and

distribution display means, operatively connected to said received signal frequency vs. electric field intensity distribution producing means and said storage means, for displaying the received signal frequency vs. electric field intensity distribution based on the stored content of the storage means.

4,476,580
AUTOMATIC CONTINUOUS TUNING CONTROL APPARATUS FOR A RECEIVER

Kouji Tanaka, Oora; Osamu Ikeda, Ooizumi, and Yoshio Nakayama, Menuma, all of Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,088
Claims priority, application Japan, Jun. 17, 1980, 55-82254; Jun. 17, 1980, 55-82255
Int. Cl.³ H03J *7/22*
U.S. Cl. 455—164 **14 Claims**



1. A tuning control apparatus of a receiver having an electronic tuner for tuning to the broadcast signals of broadcasting stations, said tuner including high frequency receiving means with voltage-controlled oscillator means for determining the tuning frequency of said high frequency receiving means as a function of a given tuning voltage applied to the voltage-controlled oscillator means, said tuning control apparatus comprising:

tuning state signal providing means for providing a tuning state signal representative of the tuning state of the tuner with respect to a broadcasting station signal;

automatic searching means for changing the tuning frequency of said high frequency receiving means to search for and locate a broadcasting station signal, said searching means producing a locate signal when a broadcasting station signal is located, said automatic searching means including a voltage synthesizer means which includes means responsive to said tuning state signal for continuously changing a tuning voltage to be applied to said voltage-controlled oscillator;

phase-locked loop means for holding the tuning frequency of said high frequency receiving means, said phase-locked loop means including

frequency dividing means which includes means programmable for frequency dividing the frequency of the ouput from said voltage-controlled oscillator means to generate a divided output signal,

reference signal generating means for generating a reference signal,

difference signal producing means means for comparing the divided output signal of said frequency dividing means and said reference signal, and producing a difference signal associated with at least one of a frequency difference and phase difference between said two signals, and

said voltage synthesizer means includes means responsive to the output of said difference signal producing means for generating a tuning voltage to be applied to said voltage-controlled oscillator means;

said frequency dividing means includes means for counting a

frequency of the signal from said voltage-controlled oscillator means for obtaining frequency data associated with a receiving frequency being received by said high frequency receiving means,

data converting means for converting said frequency data associated with the receiving frequency obtained from said means for counting into frequency division ratio data for use in said programmable frequency dividing means included in said phase-locked loop means when the broadcasting station signal is located by said automatic searching means;

means for setting the frequency division ratio data for the receiving frequency from said data converting means into said frequency dividing means included in said phase-locked loop means; and

selecting means for enabling said phase-locked loop means in place of said automatic searching means in response to the locate signal produced when the broadcasting station signal is located by said automatic searching means.

4,476,581

FM RECEIVER WITH SUBCARRIER DECODING CIRCUIT

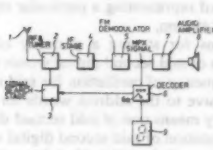
Peter Bragas, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,431

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1981, 3143468

Int. Cl.³ H04B 1/16; H03J 7/20

U.S. Cl. 455—166 **9 Claims**



1. Frequency modulated (FM) receiver to receive FM signals including audio signals which are frequency modulated on a carrier and have a band width defining an audio band, and including an auxiliary subcarrier (57 kHz) which is, selectively, amplitude modulated (AM) with

(1) a first signal (RR) representing a radio station or region signal and indicative that the particular station to which the receiver is tuned is capable of broadcasting announcements, and

(2) a second signal (AR) which is broadcast when the announcement is actually being radiated over the audio band of the FM signal,

and wherein, during modulation of the auxialiary subcarrier by the second signal (AR), the degree of modulation by the first signal (RR) is reduced with respect to modulation by the first signal (RR) in the absence of modulation by the second signal (AR).

said receiver having

an FM demodulator (**5**) for demodulating the carrier and deriving the auxiliary AM subcarrier and the audio signal;

subcarrier filter means (**10, 11**) coupled to the FM demodulator for passing the auxiliary AM subcarrier and blocking the audio signal a filtered auxiliary subcarrier signal;

an AM demodulator for demodulating the passed AM subcarrier;

AR filter means (**13**) tuned to the frequency of the second signal (AR) coupled to the AM demodulator and deriving an AR signal when it is being modulated on the auxiliary subcarrier;

and first filter means (**14, 16, 17, 18**) coupled to the AM demodulator and tuned to a selected first RR frequency and deriving an RR signal,

said receiver further comprising,

means for preventing loss of reception from a radio station which is radiating the FM signal including the auxiliary subcarrier, modulated by the first signal (RR), and while the RR signal modulation degree reduces by preventing re-tuning of the receiver to a different radio station, including

a logic circuit (**22, 23**) coupled to a tuning stage (**2, 3**) of the receiver and coupled to said AR filter means and said first filter means for selective prevention of station change of the receiver due to re-tuning of the receiver to a different radio station, said

logic circuit (**22, 23**) being logically responsive to

(a) presence or absence of an RR signal; and

(b) presence of an AR signal to perform said station change prevention.

4,476,582

MOBILE BROADCAST RECEIVER WITH CHANNELS SELECTABLE ACCORDING TO RECEPTION LOCATION

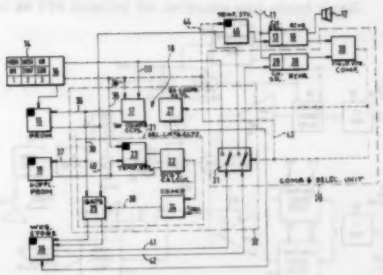
Karl-Peter Strauss, Hildesheim, and Jürgen Kässer, Diekholzen, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Apr. 13, 1983, Ser. No. 484,569

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214155

Int. Cl.³ H03J 7/20; H04B 1/16

U.S. Cl. 455—166 **10 Claims**



1. Mobile radio broadcast receiver for automatically tuning from one to another of VHF or UHF stations broadcasting a network program as the receiver is carried, in a vehicle, away from the service area of the station to which it was most recently tuned, comprising:

tuning means for initially tuning the receiver to a station that broadcasts a network program, for maintaining reception of said station until said means are controllably switched over to tuning another station and thereafter for maintaining said receiver tuned to said other station;

fixed information storage means for storing frequency assignments and transmitter location coordinates of stations receivable by the receiver in their respective service areas along with identification of networks of which the programs are broadcast by the stations of which the frequencies and coordinates are stored;

means for reading out of said fixed information storage means the frequency assignments and location coordinates stored therein for the stations that broadcast the same network program as the station in which the receiver is contemporaneously tuned to receive;

distance discriminating means including distance calculating and distance comparing means for selecting from the output of said reading out means the read-out frequency assignments of only those stations of which the transmitter

locations are at a distance from the transmitter location of said station which the receiver is contemporaneously tuned to receive, which distance does not exceed a predetermined maximum distance, and for storing said selected frequency assignments in a working temporary store;

means for comparing the quality of reception of said station which the receiver is contemporaneously tuned to receive, successively, with the available reception quality of the stations of which the frequency assignments are stored in said working store, and

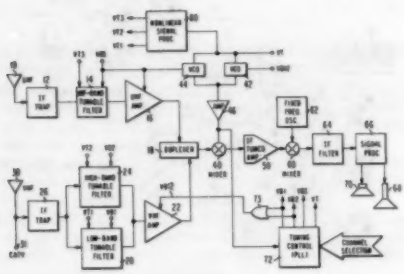
means, responsive to determination by said comparing means that reception of a station of which the frequency assignment is stored in said working store is available with better quality than reception of said station in which the receiver is contemporaneously tuned to receive, for switching over said tuning means so as to tune the receiver for reception of said station, the reception of which has been found to be available with better quality.

4,476,583

ELECTRONIC TRACKING FOR TUNERS

Max W. Muterspaugh, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,574
Int. Cl.³ H04B 1/26
U.S. Cl. 455—180 **13 Claims**



1. In a multiband tuning system for providing an IF signal from RF signals residing in a signal band, apparatus comprising

filter means for selecting RF signals corresponding to a selected channel in said band in response to a filter tuning control signal having a first variation range;

mixing means responsive to said selected RF signals and a local oscillator signal for frequency translating said selected RF signals to develop said IF signal;

oscillator means for generating said local oscillator signal in response to an oscillator tuning control signal having a second variation range for said band, said second range of variation being substantially less than said first range; and

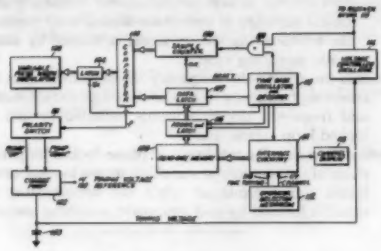
DC signal translating means including an amplifier having an input responsive to said oscillator tuning control signal and having at least first and second predetermined gain transfer characteristics for modifying said oscillator tuning control signal and for providing at an output said filter tuning control signal, and including switch means for changing the gain transfer characteristic of said amplifier from said first to said second transfer characteristic in response to one of said tuning control signals so as to derive a piecewise-linear approximation of the other of said tuning control signals.

4,476,584

DIGITAL FREQUENCY LOCK TUNING SYSTEM

Charles L. Dages, Colmar, Pa., assignor to Jerrold Electronics Corporation, Hatboro, Pa.

Filed Feb. 8, 1979, Ser. No. 10,408
Int. Cl.³ H04B 1/16
U.S. Cl. 455—182 **2 Claims**



1. A closed loop digital tuning system, the system comprising,

oscillator means responsive to a variable control voltage for generating an oscillation having a frequency dependent on the magnitude of said control voltage,

sampling means for sampling the actual output frequency of said oscillation means for a predetermined interval of time and for generating a first digital word representing the actual value of said frequency,

means responsive to incoming channel information for generating a selected one of a plurality of address words, each address word representing a particular operating channel in a CATV system,

memory means for storing a plurality of second digital words, each of said second digital words representing any desired frequency of oscillation for said oscillator means,

means responsive to the address words for retrieving from said memory means one of said second digital words, the particular location of said second digital word within said memory means being identified by said address word representing a particular operating channel in said CATV system,

means for storing the second digital word retrieved from said memory means,

comparator means for comparing the values of said first digital word with the value of said stored second digital word, and means responsive to a difference in value between said first digital word and said stored second digital word determined by said comparator means for varying said control voltage for said oscillator means, whereby said actual frequency value is changed to said desired frequency value, wherein there is further included means responsive to fine tuning information for retrieving a third digital word from said memory means, means for adding said third digital word to said second digital word, and means for applying the sum of said second and third digital words to said comparator means.

4,476,585

BASEBAND DEMODULATOR FOR FM SIGNALS

Joseph Reed, Stamford, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

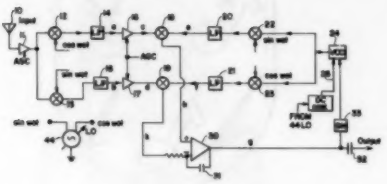
Filed Jan. 25, 1982, Ser. No. 342,442
Int. Cl.³ H04B 1/26
U.S. Cl. 455—207 **13 Claims**

6. A demodulator for frequency modulated (FM) signals comprising:

local oscillator means for providing first and second signals in phase quadrature at the center frequency of said FM signal,

first and second analog mixing means for mixing said FM

signal respectively with said first and second local oscillator signals, respective low pass filter means each for filtering a respective one of the outputs of said first and second mixing means, third and fourth analog mixing means with said third mixing means having a first input coupled to the output of said low pass filter means associated with said first mixing means and with said fourth mixing means having one input coupled to the output of said low pass filter means associated with said second mixing means, variable controlled oscillator (VCO) means having two outputs carrying third and fourth analog signals in phase



quadrature with one another and applied to respective second inputs of said third and fourth mixing means, said VCO means having a control input for controlling the frequency thereof, summing means having inputs coupled to the outputs of said third and fourth mixing means to provide an analog difference signal at its output, and control means coupled between the output of said summing means and said control input of said VCO means to cause said summing means to provide an analog demodulated signal indicative of the modulation on said FM signal.

4,476,586

IF SIGNAL PROCESSING CIRCUIT IN A RECEIVER

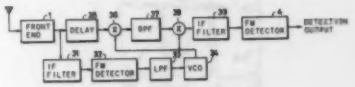
Koji Ishida, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 7, 1983, Ser. No. 464,167

Claims priority, application Japan, Feb. 5, 1982, 57-17931; Feb. 18, 1982, 57-24694; Feb. 18, 1982, 57-24695

Int. Cl.³ H04B 1/26

U.S. Cl. 455—207 **8 Claims**

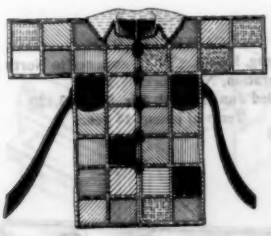


1. An IF signal processing circuit in an FM receiver comprising: means for converting a reception signal being frequency modulated into a first IF signal; a band-pass filter connected to an output of said converting means; means for detecting an output of said band-pass filter and providing a detection output; modulation means coupled to said detecting means for providing a frequency modulation signal in accordance with said detection output; means for producing a second IF signal upon mixture of said frequency modulation signal with said first IF signal; means for mixing said frequency modulation signal with said second IF signal to provide a mixed signal having the same frequency as said first IF signal; and an FM detector for receiving said mixed signal.

275,809
POCKET FOR JEANS OR THE LIKE
Martin Weinbaum, 150-15 72nd Rd., Flushing, N.Y. 11367
Filed Nov. 9, 1981, Ser. No. 319,256
Term of patent 14 years
U.S. Cl. D2—28

275,810
SWIMSUIT
Jacquelyn A. B. Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 86,477, Oct. 19, 1979,. This application May 4, 1982, Ser. No. 374,912
Term of patent 14 years
U.S. Cl. D2—40

275,811
REVERSIBLE COAT OR THE LIKE
Pollie M. Kaigler, 401 2nd St., Brooklyn, N.Y. 11215
Filed Aug. 6, 1981, Ser. No. 290,571
Term of patent 14 years
U.S. Cl. D2—44



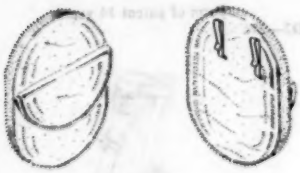
275,812
MULTIPOCKET APRON FOR CARRYING CHILDREN
Gene E. Deacon, 147 W. Mariette St., Phoenix, Ariz. 85013
Filed Feb. 8, 1982, Ser. No. 346,549
Term of patent 14 years
U.S. Cl. D2—229

275,813
SKI BOOT
Mariano Sartor, Montebelluna, Italy, assignor to NORDICA S.p.A., Montebelluna, Italy
Filed Apr. 13, 1982, Ser. No. 367,843
Claims priority, application Italy, Oct. 16, 1981, 23250-B/81 [U]
Term of patent 14 years
U.S. Cl. D2—276

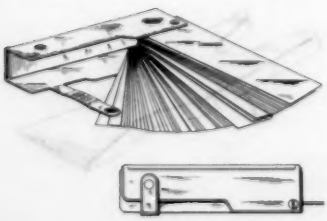
275,814
FOLDABLE BOOTJACK
Henry T. Windsor, Rte. 1, Box 121, Sheridan, Wyo. 82801
Filed Sep. 29, 1982, Ser. No. 433,847
Term of patent 14 years
U.S. Cl. D2—378.2

275,815
BELT MOUNTABLE HOLDER
Steven J. DiIenno, 6040 Lindbergh Blvd., Philadelphia, Pa. 19142
Filed Dec. 23, 1981, Ser. No. 333,969
Term of patent 14 years
U.S. Cl. D2—400

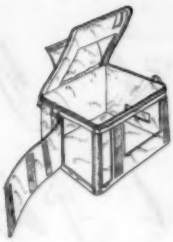
275,816
GOLF BALL POUCH
John A. Robinson, Jr., 9305 Wildemere, Detroit, Mich. 48206
Filed Aug. 18, 1982, Ser. No. 409,261
Term of patent 14 years
U.S. Cl. D2—400



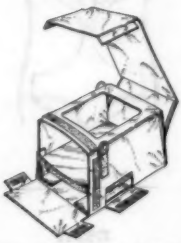
275,817
VENETIAN BLIND AND SHADE COLOR SAMPLER PACKET
William A. Keyser, Paramus, N.J., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.
Filed Jun. 30, 1982, Ser. No. 393,816
Term of patent 14 years
U.S. Cl. D3—30.1



275,818
COMBINED CADDY AND ENCLOSURE FOR A VIDEO RECORDER AND MONITOR
Steven G. Leiserson, 9190 Manor Dr., La Mesa, Calif. 92041
Filed Jun. 14, 1982, Ser. No. 388,341
Term of patent 14 years
U.S. Cl. D3—33



275,819
COMBINED CADDY AND ENCLOSURE FOR A VIDEO RECORDER AND MONITOR
Steven G. Leiserson, 9190 Manor Dr., La Mesa, Calif. 92041
Filed Jun. 14, 1982, Ser. No. 388,579
Term of patent 14 years
U.S. Cl. D3—33



275,820
CASSETTE TRAY
Michael W. Young, Flushing, N.Y., assignor to North American Philips Corporation, New York, N.Y.
Filed Jun. 1, 1982, Ser. No. 383,420
Term of patent 14 years
U.S. Cl. D3—35

275,821

CARRY ON BAG

James Iszler, Bogota, Colombia, assignor to Land Industries, Inc., River Edge, N.J.

Filed Jun. 3, 1982, Ser. No. 384,618

Term of patent 14 years

U.S. Cl. D3—71

FIG. 1

275,822

CARRYING CASE FOR ELECTRICAL MEASURING INSTRUMENTS OR THE LIKE

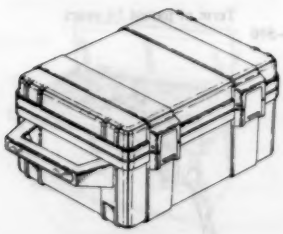
Kenneth Gatland, Walmer; David C. Tedd, Folkestone; Hugh R. Marsh, Canterbury, and Stephen J. Masters, Dover, all of England, assignors to Thorn Emi Instruments Limited, Dover, England

Filed May 27, 1982, Ser. No. 382,697

Claims priority, application United Kingdom, Jan. 30, 1982, 821004896

Term of patent 14 years

U.S. Cl. D3—73



275,823

ATTACHE CASE

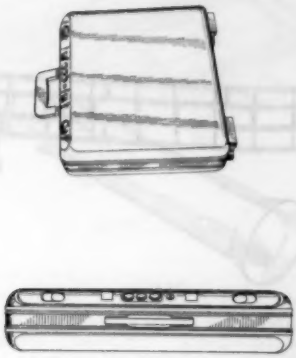
Andre G. Seynhaeve, Senlis, France, assignor to Societe Delsey, Bobigny, France

Filed Jun. 12, 1981, Ser. No. 273,104

Claims priority, application France, Dec. 17, 1980, 803898

Term of patent 14 years

U.S. Cl. D3—76



275,824

DISPLAY STAND

Fred W. Kates, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.

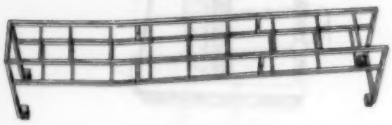
Filed Feb. 22, 1982, Ser. No. 351,090

The portion of the term of this patent subsequent to Jul. 31, 1998, has been disclaimed.

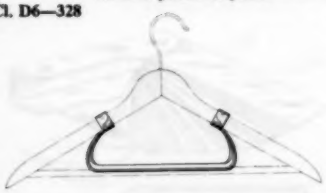
Term of patent 14 years

U.S. Cl. D6—464

275,825
DISPLAY STAND
Fred W. Kates, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Feb. 22, 1982, Ser. No. 351,091
The portion of the term of this patent subsequent to Jul. 31, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—464



275,826
RETAINER ACCESSORY FOR A GARMENT HANGER
Dwight C. Brown, 1516 N. Nicholas St., Arlington, Va. 22205
Filed Oct. 1, 1979, Ser. No. 80,419
Term of patent 14 years
U.S. Cl. D6—328



275,827
HOODED TOWEL
Karen E. Henry, 505 Tennessee, Lawrence, Kans. 66044
Filed Jun. 2, 1982, Ser. No. 384,285
Term of patent 14 years
U.S. Cl. D6—608

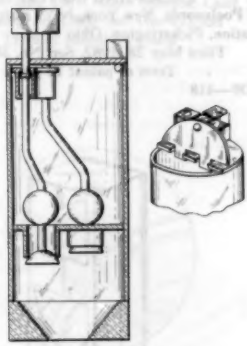
275,828
ANGLE GEAR DEVICE FOR VENETIAN BLINDS
Hans R. Brolin, Mulsjö, Sweden, assignor to AB Perma System, Mulsjö, Sweden
Filed Nov. 24, 1981, Ser. No. 324,474
Claims priority, application United Kingdom, Jun. 18, 1981, 1001048
Term of patent 14 years
U.S. Cl. D6—580

275,829

DISPENSER FOR INSTANT COFFEE, TEA, OR THE LIKE

John H. Starke, New City, N.Y., assignor to Innovative Enterprises, Inc., New City, N.Y.

Continuation-in-part of Ser. No. 148,053, Jul. 29, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 401,301
Term of patent 14 years
U.S. Cl. D7—52

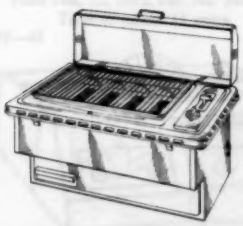


275,830

BARBECUE FOR PLACEMENT IN AN OPENING IN A CABINET, TABLE OR THE LIKE

Susumu Naito, and Kotaro Tanaka, both of Nagoya, Japan, assignors to Rinnai Kabushiki Kaisha, Aichi, Japan

Filed Sep. 17, 1981, Ser. No. 303,184
Claims priority, application Japan, Mar. 27, 1981, 56-12472
Term of patent 14 years
U.S. Cl. D7—337

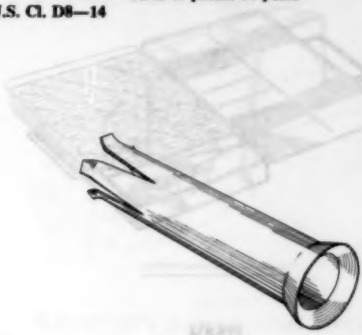


275,831

ELECTRICAL CONDUCTOR WIRE FEEDING TUBE FOR FIRE WALL LEAD-IN

Bengt E. Legerius, Nyköping, and Hans W. Siebert, Oxelösund, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 14, 1981, Ser. No. 311,235
Claims priority, application Sweden, Apr. 24, 1981, 81-1031
Term of patent 14 years
U.S. Cl. D8—14

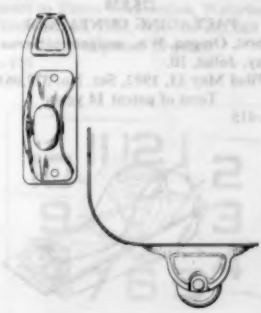


275,832

COMBINED LUGGAGE WHEEL MOUNTING PLATE AND WHEEL ASSEMBLY

Henry L. Kotkins, Jr., King County, Wash., assignor to Skyway Luggage Company, Seattle, Wash.

Filed Oct. 2, 1981, Ser. No. 307,785
Term of patent 14 years
U.S. Cl. D8—375



275,833

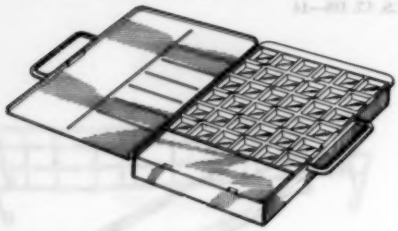
COMBINED MEDICATION DISPENSER AND CASSETTE

Jack W. Malpass, Andover, N.J., assignor to Berlex Laboratories, Inc., Cedar Knolls, N.J.

Filed Nov. 16, 1981, Ser. No. 321,667

Term of patent 14 years

U.S. Cl. D9—341



275,834

CAN BODY

Mark N. Slade, Faringdon, England, assignor to Metal Box Limited, Reading, England

Filed Oct. 21, 1981, Ser. No. 313,591

Claims priority, application United Kingdom, Apr. 23, 1981, 1000101

Term of patent 14 years

U.S. Cl. D9—355

275,835

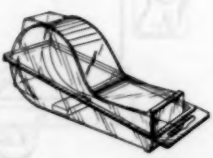
PACKAGING CONTAINER

Rodney D. Borst, Oregon, Wis., assignor to Seron Manufacturing Company, Joliet, Ill.

Filed May 11, 1982, Ser. No. 377,061

Term of patent 14 years

U.S. Cl. D9—415



275,836

DISPLAY CARTON

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 917,299, Jun. 20, 1978,. This application Jul. 1, 1981, Ser. No. 279,354

Term of patent 14 years

U.S. Cl. D9—418

275,837

PACKAGING CONTAINER

Raymond Poelvoorde, New York, N.Y., assignor to R. G. Barry Corporation, Pickerington, Ohio

Filed May 28, 1982, Ser. No. 383,328

Term of patent 14 years

U.S. Cl. D9—418

275,838

BOTTLE CAP

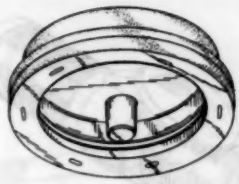
Marc A. Rosen, New York, N.Y., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 21, 1982, Ser. No. 341,397

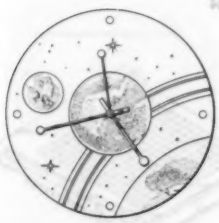
Term of patent 14 years

U.S. Cl. D9—435

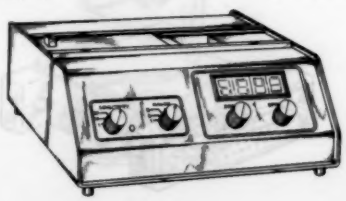
275,839
CAN RESEALER
Robert S. Lutzker, 21 Lee Ave., East Williston, N.Y. 11596
Filed Jun. 10, 1982, Ser. No. 387,026
Term of patent 14 years
U.S. Cl. D9—439



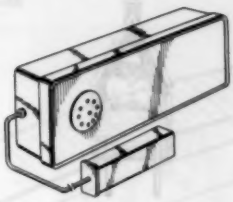
275,840
WALL CLOCK
Carl L. Rhetts, P.O. Box 1381, Santa Monica, Calif. 90406
Filed Aug. 30, 1982, Ser. No. 412,951
Term of patent 14 years
U.S. Cl. D10—6



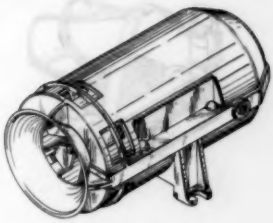
275,841
FLUROMETER
Andrew W. Perry, 1740 E. Pacifico Ave., Anaheim, Calif. 92805; Richard W. Henson, 2101 Wildflower, Brea, Calif. 92621; Bruce A. Sargeant, 6191 Cerulean, Garden Grove, Calif. 92645, and Frank C. Campion, 14465 C Redhill Ave., Tustin, Calif. 92680
Filed Feb. 12, 1982, Ser. No. 348,583
Term of patent 14 years
U.S. Cl. D10—46



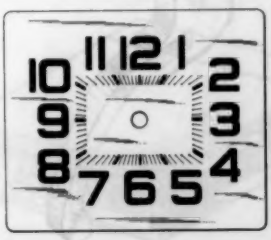
275,842
TEMPERATURE LEVEL ALARM
Donald G. Gilbert, 221 Springdale, Derby, Kans. 67037, and Roy E. Hastings, 110 E. 82nd St., South, Wichita, Kans. 67233
Filed Oct. 4, 1982, Ser. No. 432,531
Term of patent 14 years
U.S. Cl. D10—106



275,843
SIREN
Stuart L. Sharenow, East Northport, N.Y., assignor to Primary Security Inc., Mineola, N.Y.
Filed Jan. 22, 1982, Ser. No. 341,953
Term of patent 14 years
U.S. Cl. D10—120

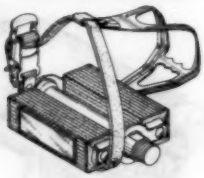


275,844
ALARM CLOCK DIAL
William J. Cook, Trumbull, and Alvaro Correa, Chesire, both of Conn., assignors to Timex Corporation, Waterbury, Conn.
Filed Dec. 18, 1981, Ser. No. 332,265
Term of patent 14 years
U.S. Cl. D10—125



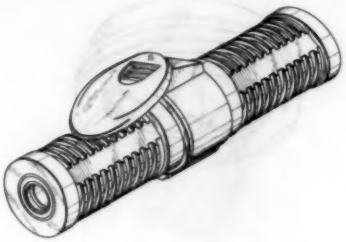
275,845
CHRISTMAS DECORATION
Mary Ann Kelly, P.O. Box 16201, Ludlow, Ky. 41016
Continuation-in-part of Ser. No. 291,108, Aug. 7, 1981,. This application Sep. 28, 1983, Ser. No. 536,700
Term of patent 14 years
U.S. Cl. D11—129

275,846
COMBINED BICYCLE PEDAL AND TOE CLIP
Frank L. Buchanan, Jr., 4812 Frieda Dr., Los Angeles, Calif. 90065, and Bob B. Buchanan, 23721 Monument Canyon Dr., Diamond Bar, Calif. 91765
Filed May 24, 1982, Ser. No. 381,042
Term of patent 14 years
U.S. Cl. D12—125

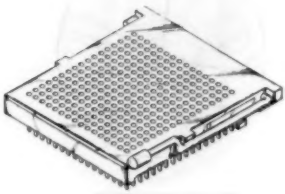


275,847
COLLAPSIBLE HAND-GRIP LEVER FOR MOTORCYCLE AND THE LIKE
Randy L. Adams, 17514 Autumn Trail La., Houston, Tex. 77084
Filed Oct. 23, 1981, Ser. No. 314,813
Term of patent 14 years
U.S. Cl. D12—179

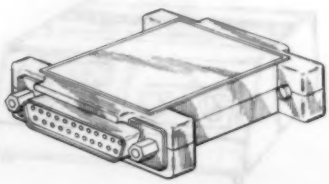
275,848
ELECTRICAL CONNECTOR ASSEMBLY
Luigi Ricossa, Milan, Italy, assignor to reter S.p.a., Italy
Filed May 28, 1981, Ser. No. 267,793
Claims priority, application Italy, Nov. 28, 1980, 23507B/80
Term of patent 14 years
U.S. Cl. D13—24



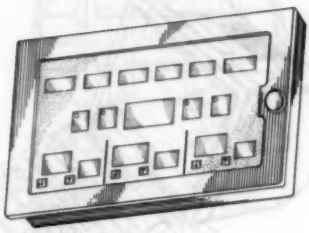
275,849
IC SOCKET PANEL OR THE LIKE
Toshihiro Sakurai, Tokyo, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan
Filed Mar. 8, 1982, Ser. No. 356,151
Term of patent 14 years
U.S. Cl. D13—24



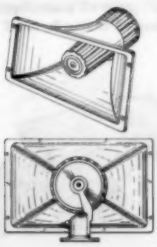
275,850
CONNECTOR CASE
Kirk D. Wilson, Littleton, Colo., assignor to Protex Industries, Inc., Denver, Colo.
Filed Apr. 26, 1982, Ser. No. 372,246
Term of patent 14 years
U.S. Cl. D13—24



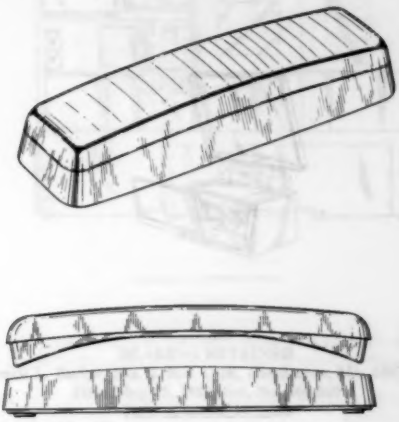
275,851
CONTROL PANEL FOR A FLUE GAS ANALYZER SYSTEM
Robert J. Bambeck, 9926 Barranca, Huntington Beach, Calif. 92646
Filed Oct. 8, 1981, Ser. No. 309,638
Term of patent 14 years
U.S. Cl. D13—35



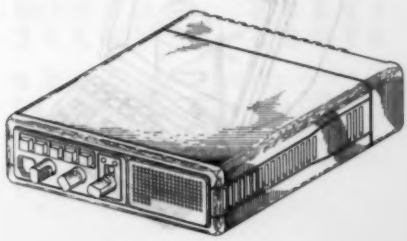
275,852
SPEAKER
Bernard A. Brisson, 22417 Marine, East Detroit, Mich. 48021
Filed May 24, 1982, Ser. No. 381,013
Term of patent 14 years
U.S. Cl. D14—35



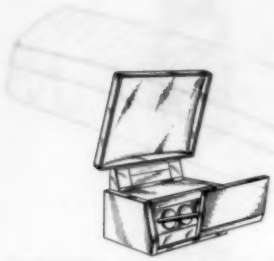
275,853
TELEPHONE
Eric J. Marshall, London, England, assignor to The Marshall Telephone Corporation Limited, Sidcup, England
Filed Dec. 23, 1981, Ser. No. 333,878
Claims priority, application United Kingdom, Jul. 2, 1981, 1001273
Term of patent 14 years
U.S. Cl. D14—53



275,854
VEHICULAR TWO-WAY RADIO OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 5, 1982, Ser. No. 365,652
Term of patent 14 years
U.S. Cl. D14—68

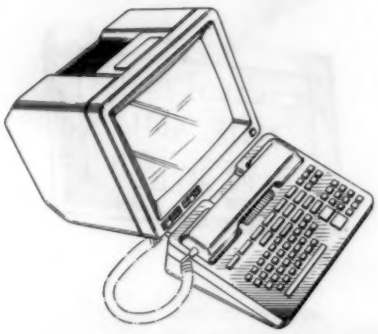


275,855
TELEVISION PROJECTOR
Masayoshi Tsuchiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 29, 1982, Ser. No. 373,130
Claims priority, application Japan, Oct. 30, 1981, 56-048429
Term of patent years
U.S. Cl. D14—79



275,856
DATA TRANSMISSION TERMINAL
Michel Moraine, Boersch, France, assignor to La Telephonie Industrielle et Commerciale Telic Alcatel, Strasbourg, France
Filed Feb. 2, 1982, Ser. No. 345,072
Claims priority, application France, Aug. 12, 1981, 812816
Term of patent 14 years
U.S. Cl. D14—101

275,857
DATA TRANSMISSION TERMINAL
Michel Moraine, Boersch, France, assignor to La Telephonie Industrielle et Commerciale Telic Alcatel, Strasbourg, France
Filed Feb. 2, 1982, Ser. No. 345,073
Claims priority, application France, Aug. 12, 1981, 81 2816
Term of patent 14 years
U.S. Cl. D14—101



275,858

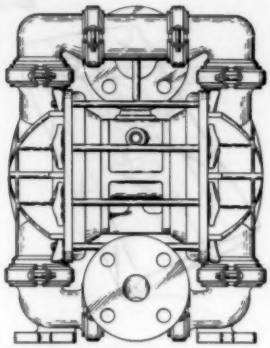
DOUBLE DIAPHRAGM PUMP

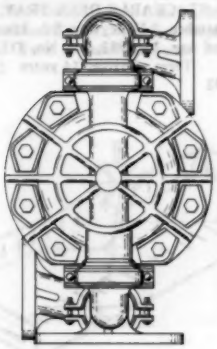
James K. Wilden, Yucaipa, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

Filed Jun. 1, 1982, Ser. No. 383,494

Term of patent 14 years

U.S. Cl. D15—7





275,859

LOADER TOOTH ADAPTERS

Ove Nilsson, Örebro, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed May 20, 1982, Ser. No. 380,303

Claims priority, application Sweden, Nov. 23, 1981, 81-2718

Term of patent 14 years

U.S. Cl. D15—28

FIG. 1

275,860

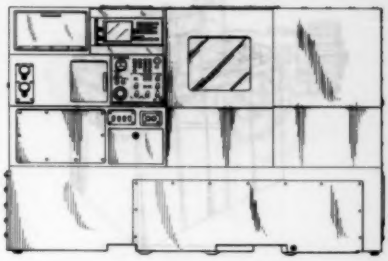
COMBINED CHUCKER AND BAR MACHINE

Ivan R. Brown, Breesport, and Daniel J. Campanelli, Horseheads, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Mar. 9, 1982, Ser. No. 356,434

Term of patent 14 years

U.S. Cl. D15—130



275,861

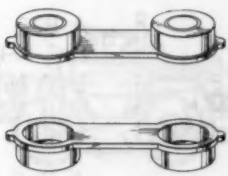
BEARING RETAINER

Denzil L. Barber, Rte. 2, Box 130K, Camdenton, Mo. 65020

Filed May 15, 1981, Ser. No. 264,010

Term of patent 14 years

U.S. Cl. D15—138



275,862

DRILL SHAFT HEAD

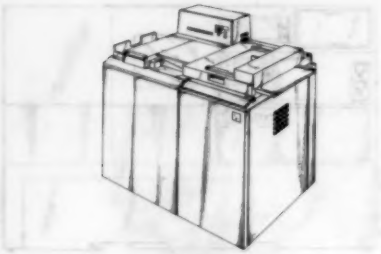
John N. Kilman, III, and Phillip L. Myers, both of Stone Mountain, Ga., assignors to Brainard-Kilman Drill Company, Tucker, Ga.

Filed Dec. 9, 1981, Ser. No. 328,915

Term of patent 14 years

U.S. Cl. D15—138

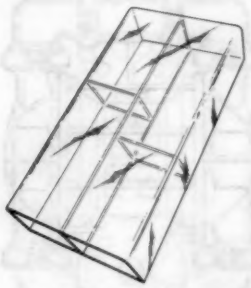
275,863
ELECTROPHOTOGRAPHIC COPIER OR THE LIKE
Christopher Hawley, Longmont; Robert M. Hofland, Boulder, and Lowell M. Simson, Louisville, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 4, 1982, Ser. No. 374,676
Term of patent 14 years
U.S. Cl. D16—30



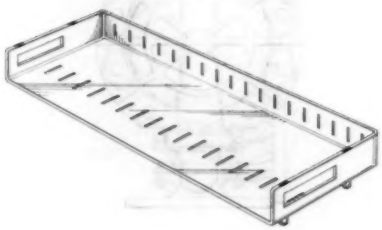
275,864
TYPE FONT
Ruedi Zwissler, St. Jakobstrasse 87, and Els Maehr, Müller-Friedbergstrasse 28, both of 9000 St. Gallen, Switzerland
Filed Aug. 4, 1981, Ser. No. 289,913
Claims priority, application Switzerland, Feb. 10, 1981, DM/000618
Term of patent 14 years
U.S. Cl. D18—24

A B C D E
F G H I J K
L M N O P
1 2 3 4 5
Q R S T U
6 7 8 9 0
V W X Y Z
a b c d e
f g h i j k l
m n o p q
r s t u v
w x y z . ?
A B C D E
F G H I J K
L M N O P
1 2 3 4 5
Q R S T U
6 7 8 9 0
V W X Y Z
a b c d e
f g h i j k l
m n o p q
r s t u v !
w x y z , ?

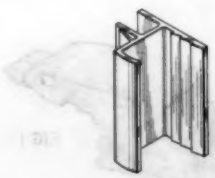
275,865
HOLDER FOR CREDIT CARD DOCKETS
Denis Crushell, The Mill, Kenmare, County Kerry, Ireland
Filed Nov. 17, 1981, Ser. No. 322,242
Claims priority, application Ireland, Aug. 27, 1981, D 153/81
Term of patent 14 years
U.S. Cl. D19—92



275,866
STACKABLE DESK TRAY
Salvatore L. Schembre, 2 Valleyview Rd., Lincoln, R.I. 02865
Filed Apr. 26, 1982, Ser. No. 372,224
Term of patent 14 years
U.S. Cl. D19—92



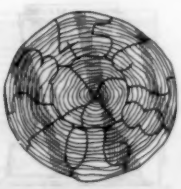
275,867
CARDHOLDER
Joyce E. Lazzara, 2912 Villa Rosa Park, Tampa, Fla. 33611, and Michael H. Patterson, 5710 River Ter., Tampa, Fla. 33604
Filed Apr. 13, 1981, Ser. No. 253,211
Term of patent 14 years
U.S. Cl. D20—43



275,868
MOUNTING DEVICE
John C. Ake, Mountainside, Helmdon Rd., Greatworth, Banbury, Oxfordshire, England
Filed May 22, 1981, Ser. No. 266,163
Claims priority, application United Kingdom, Nov. 25, 1980, 997742
Term of patent 14 years
U.S. Cl. D20—43

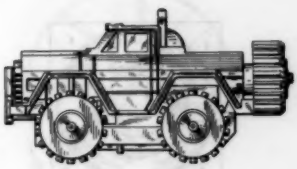
275,869
SET OF INSTRUCTIONAL CHESS PIECES
Larry G. Holm, 2296 Sibley St., St. Charles, Mo. 63301
Filed Nov. 5, 1982, Ser. No. 401,466
Term of patent 14 years
U.S. Cl. D21—52

275,870
PUZZLE
Robert L. Koehn, P.O. Box 96, Gorham, Ill. 62940
Filed Sep. 29, 1982, Ser. No. 426,844
Term of patent 14 years
U.S. Cl. D21—105

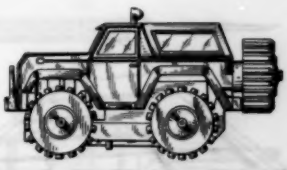


275,871
TOY VEHICLE
Peter Manning, Tiverton, England, and Melvin Mednick, New City, N.Y., assignors to LJN Toys, Ltd., New York, N.Y.
Filed Aug. 26, 1982, Ser. No. 411,836
Term of patent 14 years
U.S. Cl. D21—134

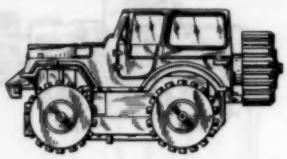
275,872
TOY VEHICLE
Manning Peter, Tiverton, England, and Melvin Mednick, New City, N.Y., assignors to LJN Toys, Ltd., New York, N.Y.
Filed Aug. 26, 1982, Ser. No. 411,838
Term of patent 14 years
U.S. Cl. D21—134



275,873
TOY VEHICLE
Peter Manning, Tiverton, England, and Melvin Mednick, New City, N.Y., assignors to LJN Toys, Ltd., New York, N.Y.
Filed Aug. 26, 1982, Ser. No. 411,837
Term of patent 14 years
U.S. Cl. D21—140

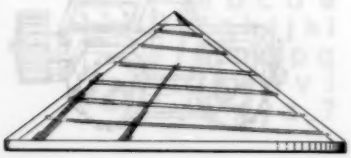


275,874
TOY VEHICLE
Peter Manning, Tiverton, England, and Melvin Mednick, New City, N.Y., assignors to LJN Toys, Ltd., New York, N.Y.
Filed Aug. 26, 1982, Ser. No. 411,839
Term of patent 14 years
U.S. Cl. D21—140

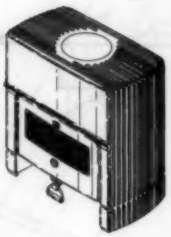


275,875
INSECT FEEDING STATION OR SIMILAR ARTICLE
Keith Woodruff, Mountainside, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Apr. 6, 1981, Ser. No. 251,669
Term of patent 14 years
U.S. Cl. D22—19

275,876
SOLAR HEATER
Paul T. Everett, 828 E. Boone St., #1, Santa Maria, Calif. 93454
Filed Jun. 8, 1981, Ser. No. 271,677
Term of patent 14 years
U.S. Cl. D23—72

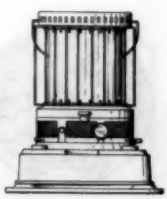


275,877
FIRE-PLACE
Niels Heger, Jessheim, Norway, assignor to Aksjeselskapet Jotul, Oslo, Norway
Filed Apr. 7, 1982, Ser. No. 366,404
Claims priority, application Norway, Oct. 8, 1981, 62336
Term of patent 14 years
U.S. Cl. D23—97

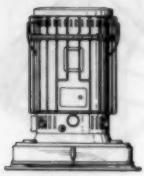


275,878
WOOD AND COAL BURNING STOVE
Duncan C. Syme, Chelsea, and Vance R. Smith, Randolph, both of Vt., assignors to Vermont Castings, Inc., Randolph, Vt.
Filed Jun. 1, 1982, Ser. No. 383,524
Term of patent 14 years
U.S. Cl. D23—97

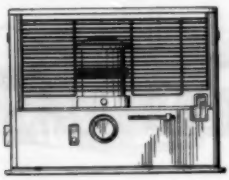
275,879
OIL-FIRED SPACE HEATER AND THE LIKE
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Nov. 5, 1982, Ser. No. 439,488
Claims priority, application Japan, May 7, 1982, 57-19797
Term of patent 14 years
U.S. Cl. D23—121



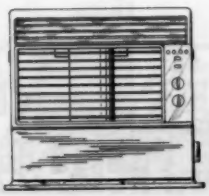
275,880
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Nov. 5, 1982, Ser. No. 439,491
Claims priority, application Japan, May 7, 1982, 57-19798
Term of patent 14 years
U.S. Cl. D23—121



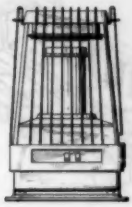
275,881
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Col. Ltd., Aichi, Japan
Filed Oct. 12, 1982, Ser. No. 434,143
Claims priority, application Japan, Apr. 9, 1982, 57-15397
Term of patent 14 years
U.S. Cl. D23—123



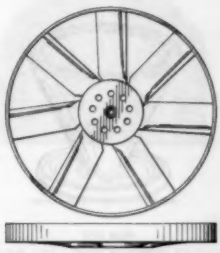
275,882
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Nov. 1, 1982, Ser. No. 438,117
Claims priority, application Japan, May 19, 1982, 57-21792
Term of patent 14 years
U.S. Cl. D23—123



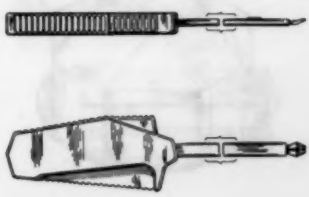
275,883
OIL-FIRED SPACE HEATER AND THE LIKE
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Nov. 1, 1982, Ser. No. 438,118
Claims priority, application Japan, May 19, 1982, 57-21793
Term of patent 14 years
U.S. Cl. D23—123



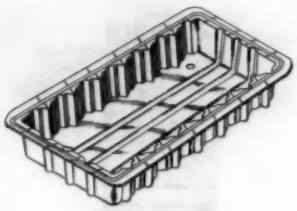
275,884
FAN BLADE
James R. C. Bushong, Riverside, Calif., assignor to Hayden, Inc., Corona, Calif.
Filed Jan. 29, 1982, Ser. No. 344,213
Term of patent 14 years
U.S. Cl. D23—165



275,885
SURGICAL LIGATING INSTRUMENT
John R. Montgomery, Fairfield; Milton W. Brumaghim, Newton; Jose C. Deniega, Brookfield, all of Conn., and Reinhart Butter, Columbus, Ohio, assignors to American Cyanamid Company, Stamford, Conn.
Filed Jun. 29, 1981, Ser. No. 278,256
Term of patent 14 years
U.S. Cl. D24—26

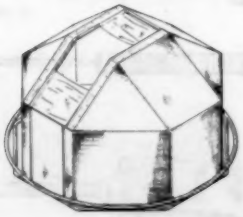


275,886
PRESCRIPTION DISPENSING TRAY
Marvin L. Sheward, and Michael L. Sheward, both of Elwood, Ind., assignors to EPCo., Inc., Elwood, Ind.
Filed Feb. 11, 1982, Ser. No. 347,908
Term of patent 14 years
U.S. Cl. D24—31

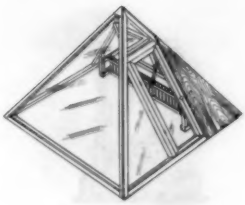


275,887
TEAT VALVE
Mark L. Anderson, 100 McKay Ave., Spring Valley, Wis. 54767, and Francis W. Child, 1307 Southfork Rd., Cody, Wyo. 82414
Filed Aug. 10, 1981, Ser. No. 291,379
Term of patent 14 years
U.S. Cl. D24—53

275,888
PORTABLE OBSERVATORY
Andrew R. Lauer, 1525 E. Mitchell, Arlington, Tex. 76010, and Edward R. Young, 1609 Virginia Dr., Grand Prairie, Tex. 75051
Filed Sep. 30, 1982, Ser. No. 429,193
Term of patent 14 years
U.S. Cl. D25—1

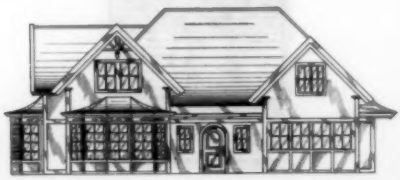


275,889
SOLAR GREENHOUSE
Berta K. Nelson, 1083 Johnson Rd., Woodbridge, Conn. 06525
Filed Aug. 13, 1982, Ser. No. 407,749
Term of patent 14 years
U.S. Cl. D25—15

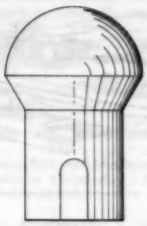


275,890
DETACHED HOUSE
Björn Fogler, Hönö , Sweden, assignor to Classic Hus AB, Gothenburg, Sweden
Filed Aug. 31, 1982, Ser. No. 413,505
Term of patent 14 years
U.S. Cl. D25—17

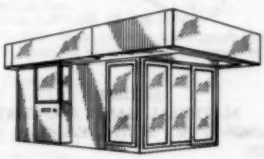
275,891
DETACHED HOUSE
Björn Fogler, Hönö , Sweden, assignor to Classic Hus AB, Gothenburg, Sweden
Filed Aug. 31, 1982, Ser. No. 413,506
Term of patent 14 years
U.S. Cl. D25—17



275,892
BUILDING FOR THE SELLING OF ICE CREAM
Michael B. Gaumer, 381 Getchell Ave., Grayslake, Ill. 60030
Filed Jun. 7, 1982, Ser. No. 385,938
Term of patent 14 years
U.S. Cl. D25—18



275,893
BUILDING STRUCTURE
James H. Duggar, 12718 Webbs Chapel Rd., Dallas, Tex. 75234
Filed Aug. 12, 1982, Ser. No. 407,383
Term of patent 14 years
U.S. Cl. D25—33

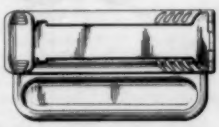


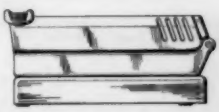
275,894
WINDOW WELL PROTECTOR
Joseph A. Sikorski, 3200 W. Bull Valley Rd., McHenry, Ill. 60050
Filed Mar. 10, 1980, Ser. No. 128,853
Term of patent 14 years
U.S. Cl. D25—54

275,895
MECHANICS ADJUSTABLE LIGHT
Richard C. Dietzen, 214 N. Third St., Effingham, Ill. 62401
Filed Jul. 8, 1982, Ser. No. 396,412
Term of patent 14 years
U.S. Cl. D26—61

275,896
LAMP BASE
John W. Caldwell, San Marino, Calif., assignor to Brown Jordan Company Limited Partnership, El Monte, Calif.
Filed Jul. 21, 1982, Ser. No. 400,499
Term of patent 14 years
U.S. Cl. D26—110

275,897
APPARATUS FOR FILLING EMPTY CIGARETTE TUBES
Gunter Schütze, and Kurt Haller, both of Trossingen, Fed. Rep. of Germany, assignors to EFKA Werke Fritz Kiehn GmbH, Trossingen, Fed. Rep. of Germany
Filed Feb. 22, 1982, Ser. No. 351,245
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, MR V 585
Term of patent 14 years
U.S. Cl. D27—51



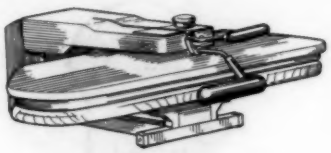


275,898
VITAMIN TABLET OR SIMILAR ARTICLE
Alan M. Beychok, Memphis, Tenn., and Marilyn Conklin, Devon, Pa., assignors to Plough, Inc., Memphis, Tenn.
Filed Dec. 27, 1982, Ser. No. 453,852
Term of patent 14 years
U.S. Cl. D28—3

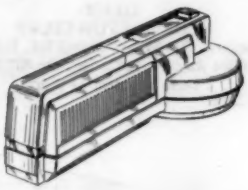
275,899
VITAMIN TABLET OR SIMILAR ARTICLE
Alan M. Beychok, Memphis, Tenn., and Marilyn Conklin, Devon, Pa., assignors to Plough, Inc., Memphis, Tenn.
Filed Dec. 27, 1982, Ser. No. 453,853
Term of patent 14 years
U.S. Cl. D28—3

275,900
WRIST-BORNE COSMETIC COMPACT
Donald Spector, 380 Mountain Rd., Union City, N.J. 07087
Filed Feb. 23, 1982, Ser. No. 351,534
Term of patent 14 years
U.S. Cl. D28—82

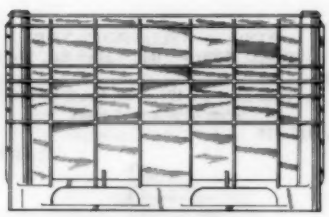
275,901
IRONING PRESS
Olindo Baruffa, and Antonio Jimenez, both of Geneva, Switzerland, assignors to Mefina S.A., Fribourg, Switzerland
Filed Jul. 20, 1982, Ser. No. 400,153
Claims priority, application Switzerland, Mar. 4, 1982, 112257
Term of patent 14 years
U.S. Cl. D32—9



275,902
BATTERY OPERATED RECORD CLEANER
Yasuo Yamada, and Tadahide Okuno, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 16, 1982, Ser. No. 348,910
Claims priority, application Japan, Aug. 13, 1981, 56-35873
Term of patent 14 years
U.S. Cl. D32—35



275,903
MATERIAL HANDLING CRATE
Denny Vasilash, 9719 - 84 Ave., Edmonton, Alberta, Canada (T6E 2E8)
Filed Nov. 23, 1981, Ser. No. 324,226
Claims priority, application Canada, Jul. 24, 1981, 24-07-81-6
Term of patent 14 years
U.S. Cl. D34—40



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TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF OCTOBER, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, 4,476,426, Cl. 323-226.000.

Atwood, George E.; Cochran, Douglas E.; Sadan, Abraham; Burnett, Charles; Tyree, Phillip O.; and Fletcher, Archibald W., to Duval Corporation. Cyclic solution mining of borate ores. 4,475,771, Cl. 299-4.000.

Auborn, James J., to GTE Laboratories Incorporated. Electrochemical cell utilizing a mixture of phosphorus oxychloride and a low freezing solvent as the electrolyte. 4,476,204, Cl. 429-196.000.

Auergesellschaft GmbH: *See*—
Hoht, Wolfgang, 4,476,096, Cl. 422-96.000.

Augunas, Algis G.: *See*—
Arlauskas, Alfonsas; and Augunas, Algis G., 4,475,754, Cl. 292-336.300.

Aull, Denis W.; and Spires, Dewayne A., to Bell Telephone Laboratories, Incorporated. Battery feed circuit. 4,476,350, Cl. 179-70.000.

Aurora Konrad G. Schulz GmbH & Co.: *See*—
Schulz, Joachim; and Thelen, Werner, 4,475,687, Cl. 237-12.30A.

Aute Gesellschaft fuer autogene Technik mbH: *See*—
Lotz, Horst K., 4,475,719, Cl. 266-48.000.

Avco Everett Research Laboratory, Inc.: *See*—
Saggese, Joseph P., 4,476,374, Cl. 219-121.0LB.

Aversano, Ralph W., to Stay Fresh, Inc. Food preservative composition. 4,476,112, Cl. 424-127.000.

Avery International Corporation: *See*—
Reed, Charles F., 4,475,969, Cl. 156-152.000.

Avery, William H., to Johns Hopkins University, The. Low cost method for producing methanol utilizing OTEC plantships. 4,476,249, Cl. 518-703.000.

AVM Corporation: *See*—
Stark, Forest G., 4,475,778, Cl. 312-330.00R.

Awaya, Akira: *See*—
Sakano, Isao; Miyahara, Shiyoichiro; Yamada, Yoshitsugu; Okazaki, Yutaka; Tokuda, Hiroshi; Awaya, Akira; and Nakano, Takuo, 4,476,128, Cl. 424-250.000.

Ayata, Naoki; Koumura, Noboru; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Kazuma, Koji, to Canon Kabushiki Kaisha. Image recording system utilizing a plurality of recording units. 4,476,486, Cl. 358-78.000.

Ayglon, Daniel; and Hardy, Marie C., to Societe Nationale Elf Aquitaine. Biocide composition comprising sulfonium compounds and organic tin compounds. 4,475,941, Cl. 71-67.000.

Aymes, William J., to Westinghouse Electric Corp. Blade orientation gauge. 4,475,291, Cl. 33-174.00R.

B.A. Innovation Aktiebolag: *See*—
Paulsson, Bertil; and Kvander, Aarno, 4,475,862, Cl. 414-513.000.

B.I. Incorporated: *See*—
Carroll, Gary T., 4,475,481, Cl. 119-51.00R.

Baackmann, Dirk; Hecht, Georg; Schlagenhaft, Johann; and Schnell, Karl, to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH. Device for remotely supervising operation of a branched data-transmission network. 4,476,561, Cl. 371-25.000.

Babcock & Wilcox Company, The: *See*—
Moss, William H.; Popiel, Lawrence; and Scheib, Thomas J., 4,475,482, Cl. 122-379.000.

Bachmann, Albert; Walti, Moritz; and Benz, Gottlieb, to Quikoton AG. Joint of textile materials. 4,476,173, Cl. 428-57.000.

Bader, Frank E.; and Green, Martin L., to AT&T Bell Laboratories. Base metal composite electrical contact material. 4,475,983, Cl. 156-656.000.

Bagus, Brian M.: *See*—
Bione, Angelo A.; and Bagus, Brian M., 4,475,430, Cl. 84-1.220.

Bailey, William J.; and Taylor, Lynn J., to Owens-Illinois, Inc. Photoreactive plastic composition and articles degradable by ultraviolet radiation and a process for their manufacture. 4,476,255, Cl. 523-125.000.

Bains, Sudarshan S., to Xerox Corporation. Curling/decurling method and mechanism. 4,475,896, Cl. 493-454.000.

Bakel, Izhak, to Geshuri Laboratories Ltd. N-Phosphonomethylglycine derivatives and herbicidal compositions containing them. 4,475,942, Cl. 71-86.000.

Baker, George E.: *See*—
Daughton, John W.; Lakatos, Andras I.; Brady, Terence W.; Bryce, James R.; Evanitsky, Eugene S.; and Baker, George E., 4,475,806, Cl. 355-14.00R.

Baker International Corporation: *See*—
Akkerman, Neil H., 4,475,599, Cl. 166-323.000.

Baker, John W.: *See*—
Houston, James M., Jr.; and Baker, John W., 4,475,571, Cl. 137-430.000.

Baker, Martin L.; and Iacovazzi, Robert A., to Martin Marietta Corporation. Aluminum, aluminum oxide, cromium, gold mirror. 4,475,794, Cl. 350-288.000.

Baker Oil Tools, Inc.: *See*—
Brakhage, William L., Jr.; and Cupples, Timothy R., 4,475,598, Cl. 166-321.000.

Balani, Prem M.: *See*—
DeLong, Arthur; and Balani, Prem M., 4,475,762, Cl. 296-65.00R.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Process of preparing catalytic brass. 4,476,244, Cl. 502-301.000.

Ball Corporation: *See*—
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,476,533, Cl. 364-473.000.

Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., to Imperial Chemical Industries Limited. Preparation of aromatic polymers from cyclohexa-3,5-diene polymers. 4,476,296, Cl. 528-481.000.

Ballendux, Gerardus M.; and McCormick, Stephen J., to Allis-Chalmers Corporation. Double acting hydraulic accumulator for power shift transmission. 4,475,641, Cl. 192-87.150.

Balmer, Charles. Pneumatic granular or seed applicator. 4,475,819, Cl. 366-107.000.

Baltimore Therapeutic Equipment Company: *See*—
Browning, Douglas, 4,475,408, Cl. 73-862.120.

Banerjee, Ratan, to BOC Group, Inc., The. Controlled inerting of chamber atmospheres. 4,475,293, Cl. 34-27.000.

Barda, Henry J.; and Hussain, Saadat, to Ethyl Corporation. High impact polystyrene containing halophenoxyalkylsilane flame retardant. 4,476,267, Cl. 524-265.000.

Barda, Henry J.; and Hussain, Saadat, to Ethyl Corporation. Acrylonitrile-butadiene-styrene composition containing halophenoxyalkylsilane flame retardant. 4,476,268, Cl. 524-265.000.

Bardy, Andre ; Comet, Michel; Coornaert, Sabine; Mathieu, Jean-Paul; Riche, Francoise; and Vidal, Michel, to Commissariat a l'Energie Atomique. Process for the extemporaneous preparation of an injectable fatty acid tagged in the omega position by means of radioactive iodine. 4,476,106, Cl. 424-1.100.

Barmatz, Martin B., to United States of America, National Aeronautics and Space Administration. Acoustic agglomeration methods and apparatus. 4,475,921, Cl. 23-313.00R.

Barnes, George E.: *See*—
Birch, Steven W.; and Barnes, George E., 4,475,696, Cl. 242-66.000.

Barnes, James M.: *See*—
Salzburg, Herbert; Meyborg, Holger; Goyert, Wilhelm; and Barnes, James M., 4,476,253, Cl. 521-176.000.

Barnes, John G., to Nuclear Power Company Limited. Latching devices and nuclear reactors incorporating such latching devices. 4,476,088, Cl. 376-347.000.

Barrett, Joy M.: *See*—
Coyle, R. T.; and Barrett, Joy M., 4,475,682, Cl. 228-123.000.

Bartl, James C., to Label-Aire Inc. Label applicator and method for labeling the forward faces of articles. 4,475,978, Cl. 156-497.000.

Bartnick, Bernhard: *See*—
Ploog, Uwe; Weggner, Ingo; Glasl, Johann; Erwied, Werner; Bartnick, Bernhard; and Hofer, Rainer, 4,476,037, Cl. 252-354.000.

Bartolf, George, to Buck Engineering Co., Inc. Electrical connector apparatus. 4,475,782, Cl. 339-18.00B.

Bartscher, Peter; Meyer, Harald; and Staisch, Diether, to WABCO Fahrzeugbremsen GmbH. Steering-brake control arrangement for a vehicle brake system. 4,475,773, Cl. 303-6.00A.

BASF Aktiengesellschaft: *See*—
Merger, Franz; and Nestler, Gerhard, 4,476,316, Cl. 560-024.000.
Pforr, Gerhard; Appl, Max; Voelkl, Erfried; Stark, Hans; and Peschau, Gerhard, 4,475,749, Cl. 285-47.000.

BASF Wyandotte Corporation: *See*—
Schmolka, Irving R., 4,476,107, Cl. 424-49.000.

Basic, John N., Sr. Pulsating incinerator hearth. 4,475,469, Cl. 110-281.000.

Basile, Peter A.: *See—*
Shoaf, Myron D.; and Basile, Peter A., 4,475,448, Cl. 99-323.100.

Bassett, Robert F. Venetian blind assembly. 4,475,579, Cl. 160-178.00R.

Battelle Memorial Institute: *See—*
Baumberger, Otto; and Kalbskopf, Reinhard, 4,476,158, Cl. 427-109.000.

Batzer, Thomas H.; and Call, Wayne R., to United States of America, Energy. Continuously pumping and reactivating gas pump. 4,475,349, Cl. 62-55.500.

Bauer, Helmut; and Krob, Erwin, to TMC Corporation. Safety ski binding. 4,475,742, Cl. 280-632.000.

Baumann, Hans, to Grob & Co. Aktiengesellschaft. Movable intermediate support for a weaving heddle frame. 4,475,574, Cl. 139-92.000.

Baumann, Hans-Peter, to Sandoz Ltd. Method for obtaining improved dyeings on polyamide. 4,475,920, Cl. 8-542.000.

Baumberger, Otto; and Kalbskopf, Reinhard, to Battelle Memorial Institute. Method of depositing a mineral oxide coating on a substrate. 4,476,158, Cl. 427-109.000.

Bay, William P. Visor attachment for helmet shield. 4,475,254, Cl. 2-424.000.

Bayer Aktiengesellschaft: *See—*
Cornely, Wolfgang; Mehesch, Hans; Meyer, Frank; Kubens, Rolf; and Winkelmann, Martin, 4,475,847, Cl. 405-264.000.
Diehl, Herbert; Pelster, Heinrich; and Habetz, Hubert, 4,476,320, Cl. 560-103.000.
Salzburg, Herbert; Meyborg, Holger; Goyert, Wilhelm; and Barnes, James M., 4,476,253, Cl. 521-176.000.
Schmidt, Adolf; and Roos, Ernst, 4,476,053, Cl. 260-192.000.

Baylor Company: *See—*
Rao, Jayanth P., 4,475,636, Cl. 188-296.000.

Bays, David E.; and Clitherow, John W., to Glaxo Group Limited. 1,2,4 Triazoze amines and their pharmaceutical use. 4,476,126, Cl. 424-248.560.

BBC Brown, Boveri & Company, Limited: *See—*
Buhler, Karl, 4,476,564, Cl. 373-9.000.

Beach, Glenn R.: *See—*
Wheeler, Myron S.; and Beach, Glenn R., 4,476,576, Cl. 455-97.000.

Beal, Glenn I.: *See—*
Hauger, Harry L.; and Beal, Glenn I., 4,475,689, Cl. 239-318.000.

Bean, Donald F. Writing instrument projectable by fluid pressure. 4,475,834, Cl. 401-99.000.

Bear Automotive Service Equipment Company: *See—*
Marino, Joseph A.; Kling, Michael J.; and Roth, Sydney J., 4,476,531, Cl. 364-431.010.

Beauchamp, Robert W., to Data General Corporation. Fixed point and floating point computation units using commonly shared control fields. 4,476,523, Cl. 364-200.000.

Beck, Richard D. Pipeline servicing tool. 4,475,260, Cl. 15-104.120.

Becker, Karl E., Jr. Intravenous tubing clamping device. 4,475,708, Cl. 251-6.000.

Becker, Karl E., Jr. Intravenous tubing clamping device. 4,475,709, Cl. 251-6.000.

Beckman Instruments, Inc.: *See—*
Scharff, Daniel H.; and Leytes, Lev J., 4,476,017, Cl. 210-94.000.

Beckstrom, Ronald D.; and Anderson, Chester C., to Hunt-Wesson Foods, Inc. Method of making and installing a pouring fitment. 4,475,274, Cl. 29-450.000.

Becton, Dickinson and Company: *See—*
Muller, A. Bromley, 4,475,899, Cl. 604-9.000.

Bednarczyk, Adam, to Mobil Oil Corporation. Method for improving accuracy in a neutron detector. 4,476,391, Cl. 250-390.000.

Beegle, Mark J.; and Grimes, Mark W., to Rockwell International Corporation. Subscriber loop current regulator. 4,476,351, Cl. 179-77.000.

Behringwerke Aktiengesellschaft: *See—*
Siebér, Axel, 4,476,230, Cl. 436-507.000.

Beihoffer, Randall A., to Toro Company, The. Filament line retaining member. 4,475,287, Cl. 30-276.000.

Belek, Ronald E.: *See—*
Buczek, Carl J.; and Belek, Ronald E., 4,475,812, Cl. 356-32.000.

Belgorodsky Zavod Energeticheskogo Mashinostroenia: *See—*
Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,475,587, Cl. 165-140.000.

Belko, Robert P.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,476,042, Cl. 252-522.00R.

Bell, Charles A.: *See—*
Scott, Robert L.; Nejame, Samuel, Jr.; Jacobs, Charles S., Jr.; and Bell, Charles A., 4,476,095, Cl. 422-75.000.

Bell, David J.: *See—*
Kraegen, Edward W.; Lazarus, Leslie; Bell, David J.; and Chisholm, Donald J., 4,475,901, Cl. 604-67.000.

Bell & Howell Company: *See—*
Prelletz, Edward R.; and Warden, Gerald D., 4,476,506, Cl. 360-96.600.

Bell Telephone Laboratories, Incorporated: *See—*
Aull, Denis W.; and Spires, Dewayne A., 4,476,350, Cl. 179-70.000.

Belle Gem Waffle Co.: *See—*
Andrizzi, Sheldon, 4,476,379, Cl. 219-524.000.

Bendix Corporation, The: *See—*
Gaiser, Robert F., 4,475,338, Cl. 60-562.000.
Hendrickson, Richard T., 4,475,444, Cl. 91-519.000.
Johnson, Edwin A.; and Leung, Chun K., 4,475,511, Cl. 123-436.000.
Masteller, Sara B.; and Fujawa, Charles S., 4,475,493, Cl. 123-179.00B.
Myers, Lawrence R., 4,475,439, Cl. 91-170.00R.
Runkle, Dean E., 4,475,336, Cl. 60-545.000.

Benigni, Suzanne: *See—*
Dornbusch, Arthur H.; Benigni, Suzanne; and Peace, Clarence R., Jr., 4,475,837, Cl. 401-213.000.

Benjamin, Benjamin C.; and Cheney, Jack E., to Schmelzer Corporation. Threaded member having resilient insert. 4,475,858, Cl. 411-304.000.

Bennett, Robert M., Jr., to Medtronic, Inc. Cross coupled amplifier. 4,476,440, Cl. 330-260.000.

Benson, Richard C., to Xerox Corporation. Enhanced paddle wheel inertial separator and transporter. 4,475,733, Cl. 271-120.000.

Benz, Gottlieb: *See—*
Bachmann, Albert; Walti, Moritz; and Benz, Gottlieb, 4,476,173, Cl. 428-57.000.

Bercwerksverband GmbH: *See—*
Dibelius, Gunther; and Pitt, Reinhold, 4,475,343, Cl. 60-648.000.

Berdinner, Edward J., Jr.; and Throckmorton, Jerome P., to International Business Machines Corporation. Coating apparatus. 4,475,478, Cl. 118-413.000.

Berfield, Robert C., to Shop-Vac Corporation. Shoe attachment for wet/dry electric vacuum cleaner. 4,475,265, Cl. 15-414.000.

Berggren, Benny; and Hassler, Yngve, to Stiftelsen Institutet For Mikrovagsteknik Vid Tekniska Hogskolan i Stockholm. Method and device for heating by microwave energy. 4,476,363, Cl. 219-10.55A.

Bergham Export GmbH: *See—*
Gollub, Klaus, 4,476,066, Cl. 261-29.000.

Bergwerksverband GmbH: *See—*
Cornely, Wolfgang; Mehesch, Hans; Meyer, Frank; Kubens, Rolf; and Winkelmann, Martin, 4,475,847, Cl. 405-264.000.

Bernau, Werner: *See—*
Hatschek, Rudolf; and Bernau, Werner, 4,475,557, Cl. 128-681.000.

Best, Wronald S., to United States of America, Navy. VMOS-FET IMPATT diode pulse bias circuit. 4,476,402, Cl. 307-270.000.

Bevacqua, Saverio F.: *See—*
Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, 4,475,280, Cl. 29-577.00C.

BHS Bayerische Berg-, Hutten-und Salzwerke Aktiengesellschaft: *See—*
Sendl, Ludwig; and Singer, Hans, 4,475,454, Cl. 100-229.00A.

Bialkowski, Wojciech L. Asphalt coating mix automatic limestone control. 4,475,818, Cl. 366-17.000.

Bienwald, Wolfgang F., to Leviton Manufacturing Company, Inc. Push-button electrical switch with unitary spiral stem and washer. 4,476,359, Cl. 200-156.000.

Bieri, Hans: *See—*
Fuchs, Ernst; Rimmele, Karl; and Bieri, Hans, 4,475,423, Cl. 83-199.000.

Bilbrey, Robert A.; Koball, Bruce R.; and Loram, John S. H., to American Hospital Supply Corporation. Automated liquid dispenser control. 4,475,666, Cl. 222-14.000.

Bindhoff, Eduardo W., to Intrusion-Prepakt Incorporated. Method and apparatus for forming cast-in-place structures. 4,476,074, Cl. 264-35.000.

Biolex Corporation: *See—*
Bouk, Raymond S., deceased, 4,476,010, Cl. 208-15.000.

Bione, Angelo A.; and Bagus, Brian M., to Marmon Group, Inc., The. Differential sampling circuit for improving signal to noise ratio in an electronic organ having multiplexed keying. 4,475,430, Cl. 84-1.220.

Birch Brothers Southern Incorporated: *See—*
Birch, Steven W.; and Barnes, George E., 4,475,696, Cl. 242-66.000.

Birch, Steven W.; and Barnes, George E., to Birch Brothers Southern Incorporated. Two station winding apparatus. 4,475,696, Cl. 242-66.000.

Birkner, John M.: *See—*
Miller, Warren K.; Miller, Michael J.; and Birkner, John M., 4,476,560, Cl. 371-15.000.

Black Clawson Company, The: *See—*
Nowisch, Heinz K.; and Alguire, Richard O., 4,476,019, Cl. 210-232.000.

Blackston, Michael D.: *See—*
Heise, Stanley R.; Blackston, Michael D.; Zekich, Michael B.; and Parselle, John L. B., 4,475,308, Cl. 49-42.000.

Blackwell, Bernie: *See—*
Netherwood, Shelley; Blackwell, Bernie; and Piccolo, Dominick, 4,476,142, Cl. 426-3.000.

Blackwell, Jennings P., Jr., to Phillips Petroleum Company. Pigmented compositions. 4,476,265, Cl. 524-10.000.

Blander, Milton; Wai, Chien M.; and Nagy, Zoltan, to United States of America, Energy. Extraction of trace metals from fly ash. 4,475,993, Cl. 204-64.00T.

Blanquet, Jean-Claude, to CEM Compagnie Electro-Mecanique. Cooling water distribution system of cooling tower. 4,476,070, Cl. 261-151.000.

Blatt, John A.: *See—*
Blatt, Leland F.; and Blatt, John A., 4,475,863, Cl. 414-589.000.

Blatt, Leland F.; and Blatt, John A. Electric servo drive lift unit. 4,475,863, Cl. 414-589.000.

Blau, Jonathan S.; and Stein, James B., to Data General Corporation. Fixed point and floating point computation units using commonly shared control fields. 4,476,537, Cl. 364-748.000.

Blaupunkt Werke GmbH: *See*—
Bragas, Peter, 4,476,581, Cl. 455-166.000.
Duckeck, Hans, 4,476,573, Cl. 455-45.000.
Matzold, Uwe; and Heiss, Dieter, 4,476,577, Cl. 455-102.000.
Strauss, Karl-Peter; and Kasser, Jurgen, 4,476,582, Cl. 455-166.000.

Bley, Robert S.: *See*—
Brodner, Robert A.; Bley, Robert S.; and Dormandy, Ray H., Jr., 4,475,898, Cl. 604-9.000.

Blight, Ronald E., to Raytheon Company. Impedance matching network for field effect transistor. 4,476,446, Cl. 333-32.000.

Blizzard, John D.; and Swihart, Terence J., to Dow Corning Corporation. Compositions producing aminofunctional silicone foams and coatings. 4,476,188, Cl. 428-332.000.

Bloom Engineering Company, Inc.: *See*—
Finke, Harry P., 4,475,885, Cl. 431-182.000.

Blum, Arnold, to International Business Machines Corporation. Shift register latch circuit means contained in LSI circuitry conforming to level sensitive scan design (LSSD) rules and techniques and utilized at least in part for check and test purposes. 4,476,431, Cl. 324-73.00R.

BOC Group, Inc., The: *See*—
Banerjee, Ratan, 4,475,293, Cl. 34-27.000.

BOC Limited: *See*—
Waldron, Stephen Norman, 4,475,350, Cl. 62-57.000.

Bodker, James E., Jr. Method and apparatus for raising softshell crawfish. 4,475,480, Cl. 119-2.000.

Boehringer Mannheim GmbH: *See*—
Buschek, Herbert; Schlumberger, Helmut; and Siedel, Joachim, 4,476,223, Cl. 435-188.000.
Poppe, Werner; van Rijekevorsel, Rainer; Ruppender, Uwe; and Macho, Heinz, 4,476,149, Cl. 427-2.000.

Boeing Company, The: *See*—
Campbell, Dennis R., 4,475,436, Cl. 89-1.804.
Cole, James B., 4,475,702, Cl. 244-214.000.
Johnson, Roger F., 4,476,567, Cl. 377-24.000.
Lubowitz, Hyman R.; and Sheppard, Clyde H., 4,476,184, Cl. 428-288.000.
McKenna, Patrick M., 4,475,752, Cl. 292-210.000.
Mittelstadt, Robert F.; and Stumpf, George R., Jr., 4,475,976, Cl. 156-286.000.
Webster, Frank R., 4,475,320, Cl. 51-288.000.

Bogdan, Mark S.: *See*—
Stark, Marvin M.; Soelberg, Kenneth B.; Pelzner, Roger B.; and Bogdan, Mark S., 4,475,370, Cl. 72-53.000.

Bohm, Horst: *See*—
Grimm, Rainer; Bohm, Horst; and Schafer, Peter, 4,475,767, Cl. 296-221.000.

Bolt Beranek and Newman Inc.: *See*—
Horrall, Thomas R.; and Hirtle, Parker W., 4,476,572, Cl. 381-73.000.

Bonnet, Alain: *See*—
Heymes, Rene; Bonnet, Alain; and Pronine, Didier, 4,476,124, Cl. 424-246.000.

Bonnici, Paul J.; and Denault, Robert P., to London Nuclear Limited. Process for treatment of oxide films prior to chemical cleaning. 4,476,047, Cl. 252-626.000.

Book, Ronald J.: *See*—
Markin, Charles; Book, Ronald J.; Smith, Michael J.; and Wiacek, Marian, 4,476,200, Cl. 429-56.000.

Boone, Gary W.; and Cochran, Michael J., to Texas Instruments Incorporated. Variable function programmed system. 4,476,541, Cl. 364-900.000.

Boothroyd, Albert R.: *See*—
Naem, Abdalla A.; Naguib, Hussein M.; Calder, Iain D.; and Boothroyd, Albert R., 4,476,475, Cl. 357-23.700.

Borcher, Thomas A., Sr.: *See*—
Wong, Louis F.; Sterling, Rosstain F.; and Borcher, Thomas A., Sr., 4,476,046, Cl. 252-550.000.

Borer, Werner; Lukacs, Janos; and Spalinger, Hugo, to Swiss Aluminium Ltd. Process for rounding off granular particles of solid material. 4,476,071, Cl. 264-15.000.

Borg-Warner Corporation: *See*—
Roberts, Richard W., 4,475,871, Cl. 417-222.000.
Underwood, Herbert N., 4,475,416, Cl. 74-868.000.

Borghi, Angelo: *See*—
Coronelli, Carolina; Borghi, Angelo; Pirali, Giorgio; and Mistrello, Giovanni, 4,476,111, Cl. 424-119.000.

Borisov, Nikolai L.: *See*—
Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,475,587, Cl. 165-140.000.

Bormann, Gerhard: *See*—
Neumann, Peter; and Bormann, Gerhard, 4,476,135, Cl. 424-270.000.

Borst, Rodney D.; and Herr, Daniel C., to Placon Corporation. Thermoforming of plastic sheet material. 4,475,881, Cl. 425-397.000.

Borzoni, John M., to Littelfuse, Inc. Clip-in interconnection bus for multiple fuse holder arrays. 4,475,783, Cl. 339-19.000.

Borzoni, John M.: *See*—
Olson, Harry W.; and Borzoni, John M., 4,475,283, Cl. 29-720.000.

Bostelman, Michael A., to Cummins Engine Company, Inc. Automatic lash adjustment for engine compression brake. 4,475,500, Cl. 123-321.000.

Bouix, Jean: *See*—
Viala, Jean-Claude; Bouix, Jean; Morabit, M'hamed El; Micheaux, Dominique; and Dalibard, Gerard, 4,476,206, Cl. 429-234.000.

Bouk, Barbara, administratrix: *See*—
Bouk, Raymond S., deceased, 4,476,010, Cl. 208-15.000.

Bouk, Raymond S., deceased (by Bouk, Barbara, administratrix), to Biolex Corporation. Catalytic water wash. 4,476,010, Cl. 208-15.000.

Bourland, Gordon, Jr.; and Price, Howard M., to LTV Aerospace and Defense Company. Honeycomb structure. 4,475,624, Cl. 181-292.000.

Boutonnat, Maurice; and Rose, Gerard, to CdF Chimie S.A. Process for interrogation of a detector of the concentration of combustible gas and an implementing device. 4,475,378, Cl. 73-23.000.

Bowman, David F., to RCA Corporation. Three horn E-plane monopulse feed. 4,476,470, Cl. 343-778.000.

Bradtmoller, Werner, to Westfalia Separator AG. Method of and apparatus for optimizing the clarified phase and concentration of solids in a continuous solids-discharge centrifuge. 4,475,897, Cl. 494-35.000.

Brady, Terence W.: *See*—
Daughton, John W.; Lakatos, Andras I.; Brady, Terence W.; Bryce, James R.; Evanitsky, Eugene S.; and Baker, George E., 4,475,806, Cl. 355-14.00R.

Bragas, Peter, to Blaupunkt Werke GmbH. FM Receiver with subcarrier decoding circuit. 4,476,581, Cl. 455-166.000.

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Brange, Jens J. V.; and Havelund, Svend, to Novo Industri A/S. Stabilized insulin preparations. 4,476,118, Cl. 424-178.000.

Brasen, Wallace R.; Gerhardt, Glenn E.; and Gregorovich, Basil V., to Du Pont de Nemours, E. I., and Company. Process for making high solids acrylic dispersion lacquer. 4,476,270, Cl. 524-364.000.

Brausfeld, Walter; and Gottling, Helmut, to WABCO Steuerungstechnik GmbH. Multiway valve device. 4,475,572, Cl. 137-625.230.

Breeden, Robert H., to Vickers, Incorporated. Power transmission. 4,475,442, Cl. 91-461.000.

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Bremer, Paul W.; Bremer, Ross L.; and Pentecost, P. Levon, 4,475,550, Cl. 128-303.00B.

Bremer, Paul W.; Bremer, Ross L.; and Pentecost, P. Levon, to Bremer Orthopedics, Inc. Halo for stereotaxic applications. 4,475,550, Cl. 128-303.00B.

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Bremer, Paul W.; Bremer, Ross L.; and Pentecost, P. Levon, 4,475,550, Cl. 128-303.00B.

Brenner, Norbert: *See*—
Ambros, Rainer; Brenner, Norbert; Fischer, Jurgen; Paffrath, Gottfried; and Schroeder, Henrich J., 4,476,048, Cl. 252-632.000.

Brennstoffinstitut Freiberg: *See*—
Smuda, Peter; Wernecke, Rainer; and Werner, Klaus, 4,475,735, Cl. 277-3.000.

Brew, James K., to Dayco Corporation. Method of making a covered V-belt having reduced coefficient of friction sides. 4,475,968, Cl. 156-141.000.

Brewer, Daniel J. Bump gate. 4,475,310, Cl. 49-131.000.

Bridgestone Tire Company Limited: *See*—
Takasu, Ryo; and Yazaki, Susumu, 4,475,815, Cl. 356-385.000.

Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., to Imperial Chemical Industries Limited. Delaminated vermiculite coated aluminum. 4,476,181, Cl. 428-220.000.

Brinker, C. Jeffrey; and Reed, Scott T., to United States of America, Energy. Low temperature process for obtaining thin glass films. 4,476,156, Cl. 427-82.000.

Brinkmann, Frank A.: *See*—
Tanner, Walter K., Jr.; Brinkmann, Frank A.; and Smith, Terry W., 4,475,368, Cl. 72-10.000.

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Ziolkowski, Antoni M.; and Stoffa, Paul L., 4,476,550, Cl. 367-21.000.
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Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., 4,476,250, Cl. 518-715.000.

Britsch, Heinz: *See*—
Eckert, Konrad; Muller, Klaus; Linder, Ernst; Polach, Wilhelm; and Britsch, Heinz, 4,475,524, Cl. 123-568.000.

Brock, R. Wade, to Healthdyne, Inc. System for providing short-term event data and long-term trend data. 4,475,558, Cl. 128-710.000.

Brodner, Robert A.; Bley, Robert S.; and Dormandy, Ray H., Jr., to American Hospital Supply Corporation, a part interest. Fetal ventriculo-amniotic shunt. 4,475,898, Cl. 604-9.000.

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Bronicki, Lucien Y.: *See*—
Assaf, Gad, 4,475,342, Cl. 60-641.600.

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Brossard, Andre. Method of chiropractic treatment and shaped blocks therefor. 4,475,542, Cl. 128-69.000.

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Repenning, Detlev; and Lindner, Bernd, 4,476,201, Cl. 429-62.000.

Brown, David T.; Rain, Don W.; and Schmalz, Richard J., to International Business Machines Corporation. Page storage control methods and means. 4,476,524, Cl. 364-200.000.

Brown, Lewis R., to Standard Oil Company, The. Method for increasing oil recovery. 4,475,590, Cl. 166-246.000.

Brown, Samuel J., to Essex Group, Inc. Electromagnetic solenoid relay. 4,476,450, Cl. 335-196.000.

Browning, Douglas, to Baltimore Therapeutic Equipment Company. Torque measuring device. 4,475,408, Cl. 73-862.120.

Bruker-Analytische Messtechnik GmbH: *See*—
Koch, Dieter; and Risler, Wolfgang, 4,475,821, Cl. 366-160.000.

Brunner, Timothy A., to Perkin-Elmer Corporation, The. Overlay test measurement systems. 4,475,811, Cl. 355-133.000.

Brunswick Corporation: *See*—
Kruncos, Francis E., 4,475,407, Cl. 73-861.530.
Riordan, Hugh E., 4,475,506, Cl. 123-352.000.
Sheaffer, Benjamin L., 4,475,499, Cl. 123-317.000.

Brunt, William H., to Pilkington Brothers P.L.C. Mixer for mixing fibres into a slurry. 4,475,817, Cl. 366-3.000.

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Daughton, John W.; Lakatos, Andras I.; Brady, Terence W.; Bryce, James R.; Evanitsky, Eugene S.; and Baker, George E., 4,475,806, Cl. 355-14.00R.

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Bartolf, George, 4,475,782, Cl. 339-18.00B.

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Walter, Leo; and Greul, Helmut W., 4,475,780, Cl. 339-17.00C.

Bucking, Hans-Walter: *See*—
May, Adolf; Bucking, Hans-Walter; and Schreiber, Manfred, 4,476,030, Cl. 252-8.800.

Buckley, Michael K.: *See*—
Broom, Gilbert R.; and Buckley, Michael K., 4,475,720, Cl. 266-157.000.

Bucksy Incorporated: *See*—
Eastridge, William K., 4,475,627, Cl. 182-187.000.

Buczek, Carl J.; and Belek, Ronald E., to United States of America, Navy. Cavity coupled optical condition sensor. 4,475,812, Cl. 356-32.000.

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Hartmann, Eduard, 4,475,451, Cl. 100-107.000.

Buhler, Karl, to BBC Brown, Boveri & Company, Limited. Gas exhaust nozzle for arc furnaces. 4,476,564, Cl. 373-9.000.

Bujadoux, Karel, to Societe Chimique des Charbonnages-CdF CHIMIE. Catalysts comprising magnesium and a transition metal. 4,476,288, Cl. 526-124.000.

Bullard, Edward M.; DiBiasi, Daniel J.; and Feeney, Frank J., to Mobil Oil Corporation. Process for preparing a poly(p-methylstyrene) foam. 4,476,077, Cl. 264-53.000.

Buonomo, Franco: *See*—
Neri, Carlo; Buonomo, Franco; and Anfossi, Bartolomeo, 4,476,327, Cl. 568-678.000.

Burkel, Rainer; Denamps, Jean; and Peter, Cornelius, to Robert Bosch GmbH. Pressure sensing apparatus. 4,475,402, Cl. 73-724.000.

Burkholder, Amy L.: *See*—
Adair, Paul C.; Burkholder, Amy L.; Duda, Homer G.; Wright, Richard F.; and Stanley, Mary M., 4,476,213, Cl. 430-229.000.

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Reece, D. C., 4,475,694, Cl. 242-54.00R.

Burnett, Charles: *See*—
Atwood, George E.; Cochran, Douglas E.; Sadan, Abraham; Burnett, Charles; Tyree, Phillip O.; and Fletcher, Archibald W., 4,475,771, Cl. 299-4.000.

Burns, Richard D.; and Wesseldyk, Albert J., to General Electric Company. Methods for fabricating electrical phase insulators for dynamoelectric machines. 4,476,082, Cl. 264-288.400.

Burns, Susan L.: *See*—
Frank, Carl A., 4,475,364, Cl. 70-139.000.

Burr Oak Tool & Gauge Company: *See*—
Franks, Lawrence A., 4,475,695, Cl. 242-54.00R.

Buschek, Herbert; Schlumberger, Helmut; and Siedel, Joachim, to Boehringer Mannheim GmbH. Process for the stabilization of aqueous solutions of cholesterol esterase from pseudomonas. 4,476,223, Cl. 435-188.000.

Bushaw, Kenneth A.; Rackley, Darwin P.; and Woodward, Milton H., to International Business Machines Corporation. Programmable peripheral processing controller with mode-selectable address register sequencing. 4,476,522, Cl. 364-200.000.

Business Systems Incorporated B.V.: *See*—
Willemse, Theodorus J. M.; and Vorstenbosch, Martinus T., 4,475,827, Cl. 400-144.200.

Busse, Vernon E.: *See*—
Schockman, Robert L.; Busse, Vernon E.; Wissman, Terry L.; and Schoch, Daniel A., 4,475,278, Cl. 29-434.000.

Byers, Thomas L. Apparatus for modifying images on photographic film. 4,475,809, Cl. 355-84.000.

Bygdnes, Perry A., to Tandon Corporation. Flexible conductor for supplying current to a pivotally movable electrical element. 4,476,404, Cl. 310-27.000.

C.G. Bretting Mfg. Co., Inc.: *See*—
Trogan, John F., 4,475,730, Cl. 270-41.000.

Cabot Corporation: *See*—
Klarstrom, Dwaine L., 4,476,091, Cl. 420-443.000.

Cael, John J., to International Paper Co. Process for pretreating wood chips with monoperoxy sulfuric acid or its salts prior to alkaline pulping. 4,475,984, Cl. 162-76.000.

Cain, Charles R. Caddy for janitorial supplies. 4,475,660, Cl. 211-113.000.

Cain, George R.; and Sczerba, Stanley T., to Raymond Kaiser Engineers Inc. Insulating charging hole cover. 4,475,989, Cl. 202-251.000.

Calcavecchio, Peter: *See*—
Drake, Evelyn N.; and Calcavecchio, Peter, 4,475,594, Cl. 166-294.000.

Calder, Iain D.: *See*—
Naem, Abdalla A.; Naguib, Hussein M.; Calder, Iain D.; and Boothroyd, Albert R., 4,476,475, Cl. 357-23.700.

Call, Wayne R.: *See*—
Batzer, Thomas H.; and Call, Wayne R., 4,475,349, Cl. 62-55.500.

Calvert, James D., Jr., to Commonwealth Associates Inc. Low-head hydroelectric generation system. 4,476,396, Cl. 290-53.000.

Calvin, Larry A. Leader dispenser. 4,475,699, Cl. 242-137.100.

Cameron Iron Works, Inc.: *See*—
Cegielski, Eugene J.; and Wilkins, Robert L., 4,475,600, Cl. 166-344.000.

Cameron, Robert S.: *See*—
Young, Lauren D.; and Cameron, Robert S., 4,475,879, Cl. 425-22.000.

Cammann, Fred W.; Nester, John; and Roach, Jere H., to Cammann Manufacturing Company, Inc. Inner wall tube disintegrator. 4,476,368, Cl. 219-69.00V.

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Camp, Floyd E.; and Swartzlander, Amy B., to Wyoming Mineral Corporation. Method of recovering uranium. 4,476,099, Cl. 423-10.000.

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Campbell, James B.: *See*—
Smith, Edgar C.; and Campbell, James B., 4,475,798, Cl. 354-114.000.

Campbell, Joseph K. Pipe stress/strain neutralizer with hydraulically balanced spherical element. 4,475,750, Cl. 285-95.000.

Canadian Patents & Development Limited: *See*—
Kahn, David A., 4,475,789, Cl. 350-96.150.
L'Abbe, Richard; St. Laurent, Andre M.; Newman, James A.; and Gallup, Brian M., 4,475,248, Cl. 2-2.500.

Canon Denshi Kabushiki Kaisha: *See*—
Koike, Hiroyuki; and Kato, Shigehiro, 4,476,507, Cl. 360-104.000.

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Ayata, Naoki; Koumura, Noboru; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Kazuma, Koji, 4,476,486, Cl. 358-78.000.
Hashimoto, Kenichiro, 4,475,825, Cl. 400-120.000.
Katsuma, Makoto; Hiramatsu, Akira; Arakawa, Kazuhiko; and Murakami, Hiroyasu, 4,475,803, Cl. 354-481.000.
Kinoshita, Takao; and Hosoe, Kazuya, 4,475,800, Cl. 354-406.000.
Kitamura, Takashi, 4,476,474, Cl. 346-160.000.
Koike, Hiroyuki; and Kato, Shigehiro, 4,476,507, Cl. 360-104.000.
Nishikawa, Tatsuo, 4,475,828, Cl. 400-146.000.

Canterino, Peter J., to Mobil Oil Corporation. Method for forming strong cross-laminated films. 4,475,971, Cl. 156-163.000.

Cantou, Christian, to U.S. Philips Corporation. Multiplier circuit including amplifier with drift compensation circuit. 4,476,438, Cl. 330-149.000.

Capasso, Federico; Tsang, Won-Tien; and Williams, Gareth F., to AT&T Bell Laboratories. Graded bandgap multilayer avalanche photodetector with energy step backs. 4,476,477, Cl. 357-30.000.

Capecchi, Augusto. Touch pad indicating arrival during swimming contests. 4,476,358, Cl. 200-52.00R.

Caprioli, Joseph: *See*—
Sears, Marvin; and Caprioli, Joseph, 4,476,140, Cl. 424-283.000.

Careatti, John A.: *See*—
Hand, Calvin H., Jr.; Hand, David J.; and Careatti, John A., 4,475,471, Cl. 110-345.000.

Cargo Safe Soe AB: *See*—
Ericsson, Sven-Olow, 4,475,854, Cl. 410-103.000.

Carlsson, Stig. Loudspeaker with wall reflex absorber. 4,475,620, Cl. 181-146.000.

Carrera, Armando, to Tenex Corporation. Composite plastic mat and method of forming same. 4,476,174, Cl. 428-58.000.

Carrier Corporation: *See*—
Akerhielm, George J.; and Mandy, Zoltan P., 4,475,354, Cl. 62-117.000.

Carroll, Gary T., to B.I. Incorporated. Identification system. 4,475,481, Cl. 119-51.00R.

Cars & Concepts, Inc.: *See*—
McKee, Gerald D., 4,475,766, Cl. 296-213.000.

Carson, Don B., to UOP Inc. Apparatus for hydrogen conservation in hydrogen recycle processes. 4,476,094, Cl. 422-62.000.

Cartwright, Neil B. Photographic enlarging easel. 4,475,808, Cl. 355-74.000.

Carubia, Jose C. Occupancy monitor. 4,476,461, Cl. 340-667.000.

Casio Computer Co., Ltd.: *See*—
Kashio, Toshio, 4,475,431, Cl. 84-1.270.
Ootsuka, Tetsuo, 4,476,570, Cl. 381-51.000.
Suzuki, Kazuyasu, 4,475,429, Cl. 84-1.190.

Castellarin, Silvano, to Fotomec-San Marco S.p.A. Film developing machine with devices for loading and transferring film supporting frames. 4,475,799, Cl. 354-308.000.

Cawley, William E.; and Trapp, Turner J., to United States of America, Energy. Lithium aluminate/zirconium material useful in the production of tritium. 4,475,948, Cl. 75-230.000.

CdF Chimie S.A.: *See*—
Boutonnat, Maurice; and Rose, Gerard, 4,475,378, Cl. 73-23.000.
Cecchi, Joseph L.: *See*—
Knize, Randall J.; and Cecchi, Joseph L., 4,476,100, Cl. 423-249.000.
Cegielski, Eugene J.; and Wilkins, Robert L., to Cameron Iron Works, Inc. Subsea well completion apparatus. 4,475,600, Cl. 166-344.000.
CEM Compagnie Electro-Mecanique: *See*—
Blanquet, Jean-Claude, 4,476,070, Cl. 261-151.000.
Centralen Mashinostroitelen Institute: *See*—
Galabov, Peter K.; and Makedonski, Boris G., 4,475,315, Cl. 51-72.00R.
Centre National de la Recherche Scientifique: *See*—
Imbach, Jean-Louis; and Gosselin, Gilles J. M., 4,476,301, Cl. 536-27.000.
Centre Regional De Transfusion Sanguine: *See*—
Kane, Odile B.; George, Eric; Tromp, Chantal L.; and Goll, Serge, 4,476,221, Cl. 435-2.000.
Centro Ricerche Fiat S.p.A.: *See*—
Ansaldi, Ermanno; and Re Fiorentin, Stefano, 4,475,406, Cl. 73-861.290.
Centronics Data Computer Corp.: *See*—
Wood, Harold, 4,475,731, Cl. 271-9.000.
Ceraver: *See*—
Kaczerginski, Alexandre; and Pargamin, Laurent, 4,476,081, Cl. 264-262.000.
Cerberus AG: *See*—
Scheidweiler, Andreas, 4,475,390, Cl. 73-431.000.
Cerefice, Steven A.: *See*—
Puskas, Imre; and Cerefice, Steven A., 4,476,242, Cl. 502-185.000.
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Champion Spark Plug Co.: *See*—
Kock, Erhard; and Zielinski, Leo J., 4,475,447, Cl. 98-115.0SB.
Chang, Clarence D.; Chu, Cynthia T. W.; Perkins, Patrick D.; and Valyocsik, Ernest W., to Mobil Oil Corporation. Olefins from methanol and/or dimethyl ether. 4,476,338, Cl. 585-322.000.
Chang, Hyokang; Shenoi, Kishan; and Agrawal, Bgahwati P., to International Telephone and Telegraph Corporation. Digital demodulation of frequency modulated signals. 4,476,435, Cl. 329-50.000.
Chang, Marguerite S.; and Orndoff, Robert R., to United States of America, Navy. Synthesis of dimethylmethylene dinitramine. 4,476,322, Cl. 564-109.000.
Chang, Michael. Non-sintered quartz ware and method for producing the same. 4,476,187, Cl. 428-325.000.
Charles Machine Works, Inc., The: *See*—
Albertson, Philip E.; and Deken, Arthur D., 4,475,604, Cl. 175-85.000.
Chartered Industries of Singapore Private Limited: *See*—
Sullivan, Leroy J., 4,475,437, Cl. 89-148.000.
Sullivan, Leroy J., 4,475,438, Cl. 89-191.00R.
Cheetham, John H., to Paterson Candy International Limited. Strainer assembly for granular media filters. 4,476,020, Cl. 210-289.000.
Chemical Handling Equipment Co., Inc.: *See*—
Norton, Patrick H., 4,475,665, Cl. 222-14.000.
Chemische Werke Huls AG: *See*—
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, 4,476,054, Cl. 260-239.00A.
Chemische Werke Huls Aktiengesellschaft: *See*—
Kleinloh, Werner; and Thronberens, Werner, 4,475,985, Cl. 162-219.000.
Chemplex Company: *See*—
Dombro, Robert A., 4,476,243, Cl. 502-236.000.
Chen, Michael J.; and Rathke, Jerome W., to United States of America, Energy. Methanol production method and system. 4,476,334, Cl. 568-902.000.
Chen, Yu-Tsai: *See*—
Poppe, Wassily; and Chen, Yu-Tsai, 4,476,280, Cl. 524-606.000.
Chenavier, Gilbert: *See*—
Ribas, Jean-Louis; and Chenavier, Gilbert, 4,475,303, Cl. 446-429.000.
Cheney, Jack E.: *See*—
Benjamin, Benjamin C.; and Cheney, Jack E., 4,475,858, Cl. 411-304.000.
Cheng, Dah Y., to International Power Technology, Inc. Method and apparatus for distillation. 4,476,024, Cl. 210-500.200.
Cherington, Floyd E.; Adams, Charles W.; and Schneider, Elrede F., to Lennox Industries, Inc. Sound reduction means for pulsating type furnace. 4,475,621, Cl. 181-212.000.
Chernotsky, Alan; and Satz, Richard. Battery charger. 4,476,425, Cl. 320-39.000.
Chevalier-Bultel, Jean-Pierre; and Drolet, Jean-Pierre, to Societe Nationale de Liamiante. Green molded product containing asbestos tailings suitable for firing. 4,476,235, Cl. 501-112.000.
Chevron Research Company: *See*—
Hsieh, C. Richard, 4,475,925, Cl. 48-197.00R.
Chiang, Robert L.; and Scherzer, Julius, to Harshaw/Filtrol Partnership. Production of fluid catalytic cracking catalysts. 4,476,239, Cl. 502-68.000.
Chiba, Hitoshi: *See*—
Onaya, Mamoru; Chiba, Hitoshi; and Hosokawa, Toshihiro, 4,475,842, Cl. 403-370.000.
Chicopee: *See*—
Lovgren, Ernest G.; and Goyal, Prashant K., 4,475,271, Cl. 19-105.000.
Chisholm, Donald J.: *See*—
Kraegen, Edward W.; Lazarus, Leslie; Bell, David J.; and Chisholm, Donald J., 4,475,901, Cl. 604-67.000.
Christ, Richard: *See*—
Muller, Erhard; Christ, Richard; and Kroll, Hartmut, 4,476,394, Cl. 250-507.100.
Christe, Karl O.; and Schack, Carl J., to United States of America, Air Force. Method for introducing fluorine into an aromatic ring. 4,476,337, Cl. 570-148.000.
Christensen, Uffe R.: *See*—
Jardin, Stephen C.; and Christensen, Uffe R., 4,476,085, Cl. 376-137.000.
Christie, William C., to Goodyear Tire & Rubber Company, The. Tire sidewall deformation detection techniques. 4,475,384, Cl. 73-146.000.
Chu, Cynthia T. W.: *See*—
Chang, Clarence D.; Chu, Cynthia T. W.; Perkins, Patrick D.; and Valyocsik, Ernest W., 4,476,338, Cl. 585-322.000.
Chu, Shaw C.; and Spencer, Arthur T., to Mobil Oil Corporation. Aqueous coatings comprising ionic polymer ester and diluent polymer with reduced monomer residue and method of preparation. 4,476,262, Cl. 523-412.000.
Chugai Denki Kogyo K.K.: *See*—
Shibata, Akira, 4,475,991, Cl. 204-15.000.
Chum, Helena L.; and Sopher, David W., to United States of America, Energy. Separation of certain carboxylic acids utilizing cation exchange membranes. 4,476,025, Cl. 210-638.000.
Cianciolo, Alfred D.; and Lines, Ellwood I., Jr., to Olin Corporation. Polyurethane foam having cleaning and germicidal activities. 4,476,251, Cl. 521-110.000.
Ciba-Geigy Corporation: *See*—
Goschke, Richard; Ferrini, Pier G.; and Sallmann, Alfred, 4,476,132, Cl. 424-258.000.
Ham, Nancy M.; and Miyazaki, Teruko, 4,476,292, Cl. 528-60.000.
Kvita, Vratislav; and Kaschig, Jurgen, 4,476,305, Cl. 544-296.000.
Martin, Henry, 4,475,945, Cl. 71-105.000.
Meyer, Willy; and Fory, Werner, 4,476,321, Cl. 564-89.000.
Ciccone, Vincent J.: *See*—
Schmitt, Richard P.; Ciccone, Vincent J.; and Gardiner, William P., 4,476,015, Cl. 210-93.000.
Cirera, Xavier D.: *See*—
Andreoli, Romeo R.; and Cirera, Xavier D., 4,476,319, Cl. 560-62.000.
Clarion Co., Ltd.: *See*—
Nishimura, Kyoshin, 4,475,751, Cl. 285-131.000.
Clark, Richard L.: *See*—
Farrow, Robert I.; and Clark, Richard L., 4,475,970, Cl. 156-159.000.
Clarke, John B.; and Firth, John F., to Allied Colloids Limited. Adhesives for prepasted wallcoverings. 4,476,190, Cl. 428-350.000.
Clarke, Oliver L., III; and Orrill, William E., to Olin Corporation. Dual water chamber bullet trap. 4,475,734, Cl. 273-410.000.
Clarke, William C.: *See*—
Fields, Ellis K.; and Clarke, William C., 4,475,597, Cl. 166-305.00R.
Claudius Peters AG: *See*—
Hilgraf, Peter, 4,475,849, Cl. 406-163.000.
Clausing, Don P.; Holmes, Maurice F.; Povio, Raymond A.; and Rebres, Robert P., to Xerox Corporation. Sheet feeding and separating apparatus with stack force relief/enhancement. 4,475,732, Cl. 271-10.000.
Clayton, John B., IV, to Data General Corporation. Synchronous data bus with automatically variable data rate. 4,476,527, Cl. 364-200.000.
Cleary, James W., to Phillips Petroleum Company. Polymer compositions and process. 4,476,284, Cl. 525-92.000.
Cleland, Keith B. Method of making an ore concentrator, and concentrator thus made. 4,476,014, Cl. 209-434.000.
Clemens, Gerald W.: *See*—
Kennell, Joseph F.; and Clemens, Gerald W., 4,475,458, Cl. 101-382.0MV.
Clements, Shannon K. Detachable non-conductive platforms for aerial boom trucks. 4,475,625, Cl. 182-113.000.
Clift, Roland; Ghadiri, Mojtaba; and Cooke, Michael J., to Coal Industry (Patents) Limited. Gas cleaning. 4,475,931, Cl. 55-77.000.
Clitherow, John W.: *See*—
Bays, David E.; and Clitherow, John W., 4,476,126, Cl. 424-248.560.
Coal Industry (Patents) Limited: *See*—
Clift, Roland; Ghadiri, Mojtaba; and Cooke, Michael J., 4,475,931, Cl. 55-77.000.
McCaffrey, David J. A., 4,476,013, Cl. 209-166.000.
Coates, Fredrica V. Adjustable diapers with fastening means. 4,475,912, Cl. 604-385.000.
Cobb, Harold W.; and Fotland, Richard A., to Delphax Systems. Corona charging apparatus. 4,476,387, Cl. 250-324.000.
Cochran, Douglas E.: *See*—
Atwood, George E.; Cochran, Douglas E.; Sadan, Abraham; Burnett, Charles; Tyree, Phillip O.; and Fletcher, Archibald W., 4,475,771, Cl. 299-4.000.
Cochran, Michael J.: *See*—
Boone, Gary W.; and Cochran, Michael J., 4,476,541, Cl. 364-900.000.
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Coker, Guy C.: *See*—
Hardie-Muncy, Darlene A.; Coker, Guy C.; and Wauters, Ronald P., 4,476,145, Cl. 426-285.000.

Colbert, Aaron: *See*—
Figiel, Francis J.; and Colbert, Aaron, 4,476,036, Cl. 252-171.000.
Colditz, Eugene F., to Kaiser Aerospace & Electronics Corporation. Flexible tank gauge. 4,475,290, Cl. 33-126.70R.
Cole, James B., to Boeing Company, The. Variable camber leading edge assembly for an airfoil. 4,475,702, Cl. 244-214.000.
Coleman, James H., to Upjohn Company, The. Process for treating panic disorders. 4,476,134, Cl. 424-269.000.
Collier, John D., to Greening Donald Co. Ltd. Dishwasher tray. 4,475,656, Cl. 211-41.000.
Collins, H. Dale; Prince, James M.; and Davis, Thomas J., to United States of America, Energy. Non-destructive testing method and apparatus utilizing phase multiplication holography. 4,476,434, Cl. 324-233.000.
Colognori, Aldo. Backscrubber and/or backscratcher with removable sponge element. 4,475,836, Cl. 401-201.000.
Colorcon, Inc.: *See*—
Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, 4,475,919, Cl. 8-518.000.
Colovas, Denny D.; Rutkowski, David J.; and Ver Ploeg, Wendell J., to Ford Motor Company. Fuel efficiency monitor. 4,475,380, Cl. 73-114.000.
Comet, Michel: *See*—
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Commonwealth Associates Inc.: *See*—
Calvert, James D., Jr., 4,476,396, Cl. 290-53.000.
Commonwealth of Australia, The: *See*—
Kraegen, Edward W.; Lazarus, Leslie; Bell, David J.; and Chisholm, Donald J., 4,475,901, Cl. 604-67.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
Gough, David S.; and Sullivan, John V., 4,476,413, Cl. 313-550.000.
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Viala, Jean-Claude; Bouix, Jean; Morabit, M'hamed El; Micheaux, Dominique; and Dalibard, Gerard, 4,476,206, Cl. 429-234.000.
Connell, James J.: *See*—
McGregor, Charles W.; and Connell, James J., 4,476,279, Cl. 524-602.000.
Conoco Inc.: *See*—
Waters, Kenneth H.; and Rice, George W., 4,476,552, Cl. 367-56.000.
Conrad, Ernst. Three point suspension device for tractors. 4,475,741, Cl. 280-482.000.
Continental Group, Inc., The: *See*—
Prevot, Stephane C.; and Krishnakumar, Suppayan M., 4,476,364, Cl. 219-10.810.
Conway, Anthony J.; Conway, Peter B.; and Conway, Philip J., to Mentor Corporation. Male condom catheter having adhesive transfer on roller portion. 4,475,910, Cl. 604-352.000.
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Conway, Anthony J.; Conway, Peter B.; and Conway, Philip J., 4,475,910, Cl. 604-352.000.
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Cook, Thomas J., Jr.; and Thorngurgh, Jay W., to Dana Corporation. Slip spline sealing plug. 4,475,737, Cl. 277-182.000.
Cooke, Claude E., Jr., to Exxon Production Research Co. Method for monitoring subterranean fluid communication and migration. 4,475,591, Cl. 166-254.000.
Cooke, Michael J.: *See*—
Clift, Roland; Ghadiri, Mojtaba; and Cooke, Michael J., 4,475,931, Cl. 55-77.000.
Cooper, Michael N.; and Pokalsky, Peter A., to Knogo Corporation. Theft detection method and apparatus in which the decay of a resonant circuit is detected. 4,476,459, Cl. 340-572.000.
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Cordis Corporation: *See*—
Tarjan, Peter P.; and Hess, Stanley R., 4,475,560, Cl. 128-785.000.
Cormier, Milton J., to University of Georgia Research Foundation, Inc. Use of N-(6 aminohexyl)-5-chloro-1-naphthalenesulfonamide, N-(6 aminohexyl)-5-chloro-2-naphthalenesulfonamide, and N-(6 aminohexyl)-5-bromo-2-naphthalenesulfonamide as vaginal contraceptives. 4,476,141, Cl. 424-321.000.
Cornely, Wolfgang; Mehesch, Hans; Meyer, Frank; Kubens, Rolf; and Winkelmann, Martin, to Bergwerksverband GmbH; and Bayer Aktiengesellschaft. Process for consolidation and sealing of geological formations and artificial beds of rock, earth, and coal. 4,475,847, Cl. 405-264.000.
Coronelli, Carolina; Borghi, Angelo; Pirali, Giorgio; and Mistrello, Giovanni, to Gruppo Lepetit S.p.A. Antibiotic S/433 and process for its preparation. 4,476,111, Cl. 424-119.000.
Corpron, Gary P.; and Pagel, Roy E., to Rosemount Inc. Differential pressure vortex sensor. 4,475,405, Cl. 73-861.240.
Corral, Jose R., to SNECMA. Non-linear function generator. 4,476,540, Cl. 364-851.000.
Costigan, Conrad A., to Spreading Machine Exchange, Inc. Drive platform for fabric spreading machines. 4,475,729, Cl. 270-31.000.
Cottrell, Jennie L.; and Hill, Deborah J., to AT&T Bell Laboratories. Call message service. 4,476,349, Cl. 179-18.00B.
Coulter Electronics Limited: *See*—
Wellerfors, Hans, 4,475,411, Cl. 73-864.240.
Courtis, Andrew: *See*—
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,476,296, Cl. 528-481.000.
Cousens, Donald E.: *See*—
Kurtz, John A.; and Cousens, Donald E., 4,476,365, Cl. 219-56.220.
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,476,366, Cl. 219-56.220.
Cousse, Henri: *See*—
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,476,061, Cl. 260-501.170.
Cox, James O. Animal ear support device. 4,475,547, Cl. 128-133.000.
Cox, Ronald W.: *See*—
Liang, Anthony; and Cox, Ronald W., 4,475,959, Cl. 148-24.000.
Coyle, R. T.; and Barrett, Joy M., to United States of America, Energy. Process for reducing series resistance of solar cell metal contact systems with a soldering flux etchant. 4,475,682, Cl. 228-123.000.
Crabtree, David J.; and Park, Elizabeth Y., to United States of America, Navy. Rubber modified epoxy adhesive. 4,476,285, Cl. 525-113.000.
Crandall, Richard: *See*—
Leibowitz, Marshall; Crandall, Richard; and Faughnan, Brian, 4,475,795, Cl. 350-357.000.
Crawford, Ray V.; Pilarski, Regis V.; and Rumpf, Robert J., to General Motors Corporation; and Firestone Tire & Rubber Company, The. Hinge and latch arrangement for vehicle seats. 4,475,769, Cl. 297-331.000.
Crawley, Phillip J.: *See*—
Pike, Daniel W.; Crawley, Phillip J.; Marshall, John L.; and Martin, Steve A., 4,475,570, Cl. 137-218.000.
Crean, Peter A.; D'Ortenzio, Remo J.; and Grow, Carolyn P., to Xerox Corporation. Printing system. 4,476,542, Cl. 364-900.000.
Cretex Companies, Inc., The: *See*—
Odill, Frank J.; and Anderson, David E., 4,475,845, Cl. 404-25.000.
Crissy, Charles F.; and Holmes, Paul M., to Aeroquip Corporation. Cargo control cart anchor. 4,475,855, Cl. 410-126.000.
Cromemco Inc.: *See*—
Terwilliger, Curtis G.; McKeefery, W. James; Sun, Sru C.; and Melen, Roger D., 4,476,467, Cl. 340-825.500.
Cronin, Michael J., to Lockheed Corporation. Tandem-generator design for aircraft. 4,476,395, Cl. 290-6.000.
Cropton, Rupert J., to Richardson-Vicks Inc. Closure means for a liquid. 4,475,838, Cl. 401-270.000.
Crosby Group, Inc., The: *See*—
Patton, Jerry C., 4,475,755, Cl. 294-82.00R.
Crossley, Jack; and Wilson, David H., to Manesty Machines Limited. Tabletting machines. 4,475,880, Cl. 425-353.000.
Croucher, Melvin D.; Duff, James M.; Hair, Michael L.; Lok, Kar P.; and Wong, Raymond W., to Xerox Corporation. Dyed stabilized liquid developer and method for making. 4,476,210, Cl. 430-114.000.
Crow, Morgan L., to Dresser Industries, Inc. Drag bit. 4,475,606, Cl. 175-410.000.
Cubalchini, Joseph, to Maremont Corporation. Method and apparatus for pressurizing fluid shock absorbers or springs. 4,475,577, Cl. 141-349.000.
Cudnohufsky, Sylvester R., to Triple R Hydraulics, Inc. Lathe. 4,475,421, Cl. 82-25.000.
Cuisia, Dionisio G.: *See*—
Sy, Anita O.; and Cuisia, Dionisio G., 4,476,029, Cl. 252-8.50C.
Culbertson, Edwin C.: *See*—
Posey, Robert G.; and Culbertson, Edwin C., 4,476,189, Cl. 428-336.000.
Cummins Engine Company, Inc.: *See*—
Bostelman, Michael A., 4,475,500, Cl. 123-321.000.
Cupples, Timothy R.: *See*—
Brakhage, William L., Jr.; and Cupples, Timothy R., 4,475,598, Cl. 166-321.000.
Czulak, Jozef; and Spieler, Richard, to David Lavery & Son Proprietary Limited. Method for the manufacture of cheese with a substantially reduced fat content. 4,476,143, Cl. 426-40.000.
D.E.P. Systems, Inc.: *See*—
Pohl, Herbert A., 4,476,004, Cl. 204-299.00R.
Dages, Charles L., to Jerrold Electronics Corporation. Digital frequency lock tuning system. 4,476,584, Cl. 455-182.000.
Dai Nippon Toryo Co., Ltd.: *See*—
Kano, Masafumi; Takahashi, Teruyuki; and Igarashi, Hiroshi, 4,476,271, Cl. 524-377.000.
Daicel Chemical Industries, Ltd.: *See*—
Okitsu, Kiyoshi; and Murai, Takaaki, 4,475,998, Cl. 204-159.150.
Daimler-Benz Aktiengesellschaft: *See*—
Faix, Heinz; and Schreiber, Winfried, 4,475,314, Cl. 49-374.000.
Dalibard, Gerard: *See*—
Viala, Jean-Claude; Bouix, Jean; Morabit, M'hamed El; Micheaux, Dominique; and Dalibard, Gerard, 4,476,206, Cl. 429-234.000.
Dallavia, Anthony J., Jr.; Van Vleck, Gordon T.; and Traver, Frank J., to General Electric Company. Catalyzing emulsion paper release compositions. 4,476,241, Cl. 502-156.000.
Dame, Richard E., to Mega Engineering. Solar collector-skylight assembly. 4,475,536, Cl. 126-419.000.
Dammig, Werner; and Moller, Heinz, to "LOESCH"-Verpackungstechnik GmbH & Co KG. Apparatus for supplying chewing gum to a packaging machine. 4,475,426, Cl. 83-887.000.

Dana Corporation: *See*—
Cook, Thomas J., Jr.; and Thorngurgh, Jay W., 4,475,737, Cl. 277-182.000.

Danfoss A/S: *See*—
Huelle, Zbigniew R.; Nielsen, Leif; and Jakobsen, Jakob S., 4,475,686, Cl. 236-68.00C.

Daniel, Daniel S.: *See*—
Toner, John L.; Daniel, Daniel S.; and Geer, Susan M., 4,476,007, Cl. 204-417.000.

Dankow, Boris: *See*—
Adrian, Fritz; and Dankow, Boris, 4,475,472, Cl. 110-347.000.

D'Antonio, Nicholas F., to Wellman Thermal Systems Corporation. Control system and method of controlling ion nitriding apparatus. 4,476,373, Cl. 219-121.00P.

Das, Suryya K.; and Kania, Charles M., to PPG Industries, Inc. Thermosetting cationic latex compositions containing aminoplast curing agents. 4,476,286, Cl. 525-162.000.

Data General Corporation: *See*—
Beauchamp, Robert W., 4,476,523, Cl. 364-200.000.
Blau, Jonathan S.; and Stein, James B., 4,476,537, Cl. 364-748.000.
Clayton, John B., IV, 4,476,527, Cl. 364-200.000.

Dataproducts Corporation: *See*—
O'Neil, Eugene J., 4,476,176, Cl. 428-195.000.

D'Ath, Philip O. Safety door lock. 4,475,753, Cl. 292-268.000.

Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., to Ball Corporation. Glassware gauging system. 4,476,533, Cl. 364-473.000.

Daughton, John W.; Lakatos, Andras I.; Brady, Terence W.; Bryce, James R.; Evanitsky, Eugene S.; and Baker, George E., to Xerox Corporation. Copier display panel. 4,475,806, Cl. 355-14.00R.

Davey, Gordon, to National Research Development Corporation. Free piston heat engines. 4,475,335, Cl. 60-520.000.

David Lavery & Son Proprietary Limited: *See*—
Czulak, Jozef; and Spieler, Richard, 4,476,143, Cl. 426-40.000.

Davids, Robert E.: *See*—
Koester, Harold E.; and Davids, Robert E., 4,475,564, Cl. 133-8.00R.

Davidson, Robert I., to Ethyl Corporation. Chloroacetonitrile synthesis. 4,476,059, Cl. 260-465.700.

Davies, Kenneth G., to Rolls-Royce Limited. Gas turbine engine and shaft. 4,475,869, Cl. 416-170.00R.

Davies, Robert B.: *See*—
Miller, Ira; Dotson, Robert N.; and Davies, Robert B., 4,476,429, Cl. 323-299.000.

Davies, Roderick D.: *See*—
Scott, David B.; Davies, Roderick D.; and See, Yee-Chaung, 4,476,482, Cl. 357-71.000.

Davis, John W., to Dunlop Limited. Vehicle braking systems. 4,475,774, Cl. 303-112.000.

Davis, Lincoln R., to NOW Industries, Inc. Encapsulating sealant for the treatment and preservation of building materials. 4,475,951, Cl. 106-74.000.

Davis, Ronald G.: *See*—
Gray, Ronald N.; and Davis, Ronald G., 4,476,449, Cl. 335-138.000.

Davis, Steven, to Envirotech Corporation. Liquid-solid separation utilizing pressure rolls covered with elastomeric layers. 4,475,453, Cl. 100-118.000.

Davis, Thomas J.: *See*—
Collins, H. Dale; Prince, James M.; and Davis, Thomas J., 4,476,434, Cl. 324-233.000.

Davison, Charles F., to Norwood Marking & Equipment Co., Inc. Roller marker. 4,475,457, Cl. 101-228.000.

Davy McKee (Poole) Ltd.: *See*—
Lawson, Kenneth T., 4,475,422, Cl. 83-13.000.

Dayco Corporation: *See*—
Brew, James K., 4,475,968, Cl. 156-141.000.
Vitellaro, Frank A., 4,475,277, Cl. 29-434.000.

Dearborn Chemical Co.: *See*—
Sy, Anita O.; and Cuisia, Dionisio G., 4,476,029, Cl. 252-8.50C.

De Biase, Pietrangelo V.: *See*—
Filho, Antonio V.; and De Biase, Pietrangelo V., 4,475,484, Cl. 123-3.000.

Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., to Sperry Corporation. Rotary cleaning mechanism for combines. 4,475,561, Cl. 130-27.00R.

Deconinck, Didier, to Allibert Exploitation. Expandable table with pivotal panels flanking removable leaf. 4,475,464, Cl. 108-83.000.

Deere & Company: *See*—
Morgan, Thomas J., 4,475,853, Cl. 409-137.000.
Orlandea, Nicolae V.; Huang, Ray C.; Romig, Bernard E.; and Wiley, Jack C., 4,475,775, Cl. 305-28.000.

De Fazio, Joseph, Jr. Case for draftsman. 4,475,650, Cl. 206-371.000.

Degussa Aktiengesellschaft: *See*—
Heidsiek, Horst; and Jackel, Gernot, 4,476,090, Cl. 419-19.000.

Deindoerfer, Fred H.; and Gangwer, James R., to International Remote Imaging Systems, Inc. Method of analyzing the distribution of a reagent between particles and liquid in a suspension. 4,476,231, Cl. 436-534.000.

DeJager, Everett J., to Xomox Corporation. Fluid valve and method of making same. 4,475,712, Cl. 251-214.000.

Deken, Arthur D.: *See*—
Albertson, Philip E.; and Deken, Arthur D., 4,475,604, Cl. 175-85.000.

Delalande S.A.: *See*—
Dostert, Philippe L.; Lacour, Alain P.; Langlois, Michel; and Strolin-Benedetti, Margherita, 4,476,136, Cl. 424-272.000.

della Valle, Francesco; and Romeo, Aurelio, to Fidia S.p.A. Method for preparing ganglioside derivatives and use thereof in pharmaceutical compositions. 4,476,119, Cl. 424-180.000.

DeLong, Arthur; and Balani, Prem M., to U.S. Seating Co., Inc. Wheel chair restraint system. 4,475,762, Cl. 296-65.00R.

Delphax Systems: *See*—
Cobb, Harold W.; and Fotland, Richard A., 4,476,387, Cl. 250-324.000.

Denamps, Jean: *See*—
Burkel, Rainer; Denamps, Jean; and Peter, Cornelius, 4,475,402, Cl. 73-724.000.

Denault, Robert P.: *See*—
Bonnici, Paul J.; and Denault, Robert P., 4,476,047, Cl. 252-626.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Maeda, Tetsuro; Ohoka, Susumu; Shingai, Masafumi; and Igawa, Haruo, 4,476,266, Cl. 524-128.000.
Miyoshi, Shigeto; Hanabusa, Kanehisa; and Kagami, Toshio, 4,476,035, Cl. 252-62.540.

Dent, Paul W., to Marconi Company Limited, The. Frequency hopping radio communications apparatus having pseudo-random channel selection. 4,476,566, Cl. 375-1.000.

D'Entremont, John R., to Texas Instruments Incorporated. Motor protector. 4,476,452, Cl. 337-102.000.

Dentsply Research & Development Corp.: *See*—
Webb, Ronald C., 4,475,768, Cl. 297-283.000.

De Poorter, Adriaan W.: *See*—
Zalm, Pieter; Jacobs, Bernardus A. J.; and De Poorter, Adriaan W., 4,476,214, Cl. 430-270.000.

Desplats, Andre; and Klabunde, Hans, to Societe dite: Tractel, S.A. Traction apparatus anchored by means of a securing pin. 4,475,717, Cl. 254-264.000.

Deutsche Texaco Aktiengesellschaft: *See*—
Neier, Wilhelm; Webers, Werner; Ruckhaber, Rainer; Osterburg, Gunther; and Ostwald, Wolf J., 4,476,333, Cl. 568-899.000.

Deutschle, Bruno J., to F. L. Saino Manufacturing Co. Door assembly. 4,475,312, Cl. 49-360.000.

Dibelius, Gunther; and Pitt, Reinhold, to Bergwerksverband GmbH. Method for the generation of heat using a heat pump, particularly for processes run only at high temperatures. 4,475,343, Cl. 60-648.000.

DiBiasi, Daniel J.: *See*—
Bullard, Edward M.; DiBiasi, Daniel J.; and Feeney, Frank J., 4,476,077, Cl. 264-53.000.

Dick, Donald E.: *See*—
Tjornehoj, David J.; Dick, Donald E.; Kiefer, Richard E.; and Smith, Fred L., III, 4,475,398, Cl. 73-599.000.

Dicke, William C., to Singer Company, The. Platen attachment for in-line sander. 4,475,316, Cl. 51-170.0TL.

Dicke, William C., to Singer Company, The. Paper retainer for a sanding device. 4,475,317, Cl. 51-170.0TL.

Dictaphone Corporation: *See*—
Hoover, John W., 4,476,510, Cl. 360-132.000.

Di Drusco, Giovanni: *See*—
Mayr, Adolfo; Galli, Paolo; Susa, Ermanno; Di Drusco, Giovanni; and Giachetti, Ettore, 4,476,289, Cl. 526-125.000.

Diehl, Herbert; Pelster, Heinrich; and Habetz, Hubert, to Bayer Aktiengesellschaft. Process for the preparation of fluoroaromatic compounds substituted in the o-position. 4,476,320, Cl. 560-103.000.

Diesel Kiki Company, Ltd.: *See*—
Hiraiwa, Syozo, 4,475,857, Cl. 411-88.000.

Dietzsch, Kurt; Oess, Hans-Dieter; Kniele, Wolfgang; Zander, Joachim; and Jeske, Gustav, to Ford-Werke Aktiengesellschaft. Air guide housing for a heating or air conditioning device for motor vehicles. 4,475,445, Cl. 98-2.050.

Difflipp, Kurt: *See*—
Wanke, Johannes; Difflipp, Kurt; and Ruh, Jurgen, 4,475,459, Cl. 101-410.000.

Dillion, Richard R.: *See*—
Henneberg, Helmut H.; and Dillion, Richard R., 4,475,705, Cl. 248-447.200.

Diner, Gerts; and Kremerova, Liza. Rope bucket elevator. 4,475,647, Cl. 198-711.000.

Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, to Chemische Werke Huls AG. Uretidione dimer of isophorone diisocyanate and method of preparation. 4,476,054, Cl. 260-239.00A.

Dr. -Ing. Rudolf Hell GmbH: *See*—
Klie, Jurgen; and Wellendorf, Klaus, 4,476,487, Cl. 358-80.000.

Dr. Johannes Heidenhain GmbH: *See*—
Nelle, Guenther, 4,475,289, Cl. 33-125.00C.

Dodd, P. David, to Storage Technology Corporation. Cache buffered memory subsystem. 4,476,526, Cl. 364-200.000.

Doll, David W. Spirally wrapped reverse osmosis membrane cell. 4,476,022, Cl. 210-21.500.

Dollard, Peter M., to AT&T Bell Laboratories. Dual threshold decoder for convolutional self-orthogonal codes. 4,476,458, Cl. 340-347.0DD.

Dombro, Robert A., to Chemplex Company. Olefin polymerization catalyst and catalyst support. 4,476,243, Cl. 502-236.000.

Domogalla, John C., to Texas Instruments Incorporated. Combination of an analog to digital converter and sampling switch. 4,476,456, Cl. 340-347.0AD.

Donaldson, Helen: *See*—
Staten, Harold D., 4,475,276, Cl. 29-229.000.

Doncer, Alex J., Jr.: *See*—
White, Harold R.; and Doncer, Alex J., Jr., 4,476,018, Cl. 210-232.000.

Donnermeyer, Dennis: *See—*
Punia, David T.; Pope, Malcolm; and Donnermeyer, Dennis, 4,475,401, Cl. 73-658.000.
Dorawala, Tansukhial G.: *See—*
Reinhard, Russell R.; Dorawala, Tansukhial G.; and Kerr, Edwin R., 4,476,339, Cl. 585-379.000.
Dormandy, Ray H., Jr.: *See—*
Brodner, Robert A.; Bley, Robert S.; and Dormandy, Ray H., Jr., 4,475,898, Cl. 604-9.000.
Dornbusch, Arthur H.; Benigni, Suzanne; and Peace, Clarence R., Jr., to Procter & Gamble Company, The. Roll-on applicating package with sealing cap. 4,475,837, Cl. 401-213.000.
Dornier, Peter, to Lindauer Dornier Gesellschaft mbH. Equipment for gas-singeing runs of tubular textile materials. 4,475,417, Cl. 26-3.000.
D'Ortenzio, Remo J.: *See—*
Crean, Peter A.; D'Ortenzio, Remo J.; and Grow, Carolyn P., 4,476,542, Cl. 364-900.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Kambe, Mitsuru; and Fukada, Tomihiro, 4,475,866, Cl. 415-112.000.
Dostert, Philippe L.; Lacour, Alain P.; Langlois, Michel; and Strolin-Benedetti, Margherita, to Delalande S.A. Aminomethyl-5 oxazolidinic derivatives and therapeutic use thereof. 4,476,136, Cl. 424-272.000.
Dotson, Robert N.: *See—*
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Douglas Components Corporation: *See—*
Leutz, Donald C., 4,475,744, Cl. 280-775.000.
Douglas, Richard B.; Fure, Barbara J.; and Lai, Juey H., to Honeywell Inc. Sensitive positive electron beam resists. 4,476,217, Cl. 430-326.000.
Douty, George H.: *See—*
Asick, John C.; Douty, George H.; Goodman, Joseph R.; Jones, Kermit M., Jr.; Landis, John M.; Snyder, Clair W., Jr.; Woratyla, John A.; and Zell, Dale R., 4,475,781, Cl. 339-17.0LM.
Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijn-Theehandel B.V.: *See—*
Thijssen, Henricus A. C.; and Van der Malen, Bernardus G. M., 4,475,355, Cl. 62-123.000.
Dow Chemical Company, The: *See—*
Harper, Stephen M.; and Stultz, Jeffrey H., 4,476,069, Cl. 261-97.000.
Dow Corning Corporation: *See—*
Blizzard, John D.; and Swihart, Terence J., 4,476,188, Cl. 428-332.000.
Niemi, Randolph G., 4,476,155, Cl. 427-58.000.
Dowd, Thomas R.: *See—*
Atkinson, Thomas; and Dowd, Thomas R., 4,475,420, Cl. 81-58.300.
Downer, Eric D. Push type curling broom. 4,475,262, Cl. 15-210.00R.
Draft Systems, Inc.: *See—*
Tanner, Walter K., Jr.; Brinkmann, Frank A.; and Smith, Terry W., 4,475,368, Cl. 72-10.000.
Dragonette, Louis R.; Frank, Laurence J.; and Numrich, Susan K., to United States of America, Navy. Calibration method for acoustic scattering measurements using a spherical target. 4,476,549, Cl. 367-13.000.
Drake, Evelyn N.; and Calcavecchio, Peter, to Exxon Research & Engineering Co. Plugging wellbores. 4,475,594, Cl. 166-294.000.
Dravo Corporation: *See—*
Forbes, Frank, 4,475,987, Cl. 202-99.000.
Drejza, John E., to International Business Machines Corporation. Position tracking emitter for a printer with emitter pattern on lead screw. 4,475,831, Cl. 400-279.000.
Dresser Industries, Inc.: *See—*
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Davis, John W., 4,475,774, Cl. 303-112.000.
Dunn, Joseph V., to Retrotec, Inc. Nitride etch bath. 4,475,977, Cl. 156-345.000.
Duphar International Research B.V.: *See—*
Steenhuisen, Johannes E.; and van Dijk, Jan, 4,475,903, Cl. 604-111.000.
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Brasen, Wallace R.; Gerhardt, Glenn E.; and Gregorovich, Basil V., 4,476,270, Cl. 524-364.000.
Hormadaly, Jacob, 4,476,039, Cl. 252-518.000.
Robinson, Ivan M., 4,476,293, Cl. 528-76.000.
Rorer, Morris P., 4,475,944, Cl. 71-90.000.
Waas, Frank F., 4,475,646, Cl. 198-480.000.
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Markin, Charles; Book, Ronald J.; Smith, Michael J.; and Wiacek, Marian, 4,476,200, Cl. 429-56.000.
Durr, Heinrich; Haubrich, Lothar; Weber, Wendelin; and Richter, Hermann, to U.S. Philips Corporation. Matrix printer with magnetic head adjustment. 4,475,826, Cl. 400-124.000.
Durrell, Robert R., to United States of America, Navy. Monolithic multi-point warhead initiator. 4,475,461, Cl. 102-200.000.
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Poeppel, Roger B.; and Dusek, Joseph T., 4,476,196, Cl. 429-32.000.
Duval Corporation: *See—*
Atwood, George E.; Cochran, Douglas E.; Sadan, Abraham; Burnett, Charles; Tyree, Phillip O.; and Fletcher, Archibald W., 4,475,771, Cl. 299-4.000.
Du Vernet, Richard B., to Westvaco Corporation. C21-Dicarboxylic acid isethionates as primary anionic surfactants. 4,476,055, Cl. 260-400.000.
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Peeters, Hermann, 4,476,306, Cl. 544-309.000.
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Brinkmann, Hans; and Pabst, Horst, 4,476,075, Cl. 264-40.700.
Earlywine, Roscoe T. Chemically treated kindling and process. 4,475,923, Cl. 44-41.000.
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Pellegrom, Leonard A., 4,475,288, Cl. 33-1.00B.
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Phillips, Bobby M., 4,476,079, Cl. 264-154.000.
Reczek, James A.; and Elwood, James K., 4,476,207, Cl. 430-17.000.
Toner, John L.; Daniel, Daniel S.; and Geer, Susan M., 4,476,007, Cl. 204-417.000.
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Eaton Corporation: *See—*
Nidle, Charles, 4,475,578, Cl. 152-415.000.
Theurer, Walter C., 4,476,360, Cl. 200-302.100.
Eberlein, Helmut, to Mero-Raumstruktur GmbH & Co. Wurzburg. Intersection joint for wooden members of trusses particularly for spaceframes. 4,475,841, Cl. 403-287.000.
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Okazaki, Masanobu; Akutsu, Satoshi; and Ebihara, Susumu, 4,476,411, Cl. 310-361.000.
Eck, Rudi: *See—*
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Eckberg, Richard P., to General Electric Company. Silicone release coatings and inhibitors. 4,476,166, Cl. 427-387.000.
Eckert, Konrad; Muller, Klaus; Linder, Ernst; Polach, Wilhelm; and Britsch, Heinz, to Robert Bosch GmbH. Device for admitting exhaust gases and fuel-air mixtures into the cylinders of an internal combustion engine. 4,475,524, Cl. 123-568.000.
Edwards, Lawrence G.: *See—*
Howard, Ronald A.; Sarangapani, Srinivasan; and Edwards, Lawrence G., 4,476,002, Cl. 204-283.000.
Edwards, Ronald L.: *See—*
Thatcher, Richard E.; Odom, Horace L.; and Edwards, Ronald L., 4,475,562, Cl. 131-110.000.
Edwards, William H. Method of producing a filled calender roll. 4,475,275, Cl. 29-110.000.
EG&G, Inc.: *See—*
Riley, William J., Jr., 4,476,445, Cl. 331-3.000.
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Substituted hexahydropyrrolo[1,2-a]-quinolines, hexahydro-1H-pyrido[1,2-a]-quinolines and pharmaceutical compositions containing same. 4,476,131, Cl. 424-258.000.
Eheim, Franz; and Fehlmann, Wolfgang, to Robert Bosch GmbH. Fuel injection system for internal combustion engines. 4,475,519, Cl. 123-502.000.
Ehmann, Eduard: *See—*
Patzschke, Hans-Peter; and Ehmann, Eduard, 4,476,261, Cl. 523-402.000.
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Eickmann, Karl. Hydraulic arrangement. 4,475,870, Cl. 417-206.000.
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Ohtani, Mikio; Wada, Hiroshi; and Kosaka, Yuzo, 4,476,222, Cl. 435-14.000.
Einstein, Harry: *See—*
Grimes, Patrick G.; and Einstein, Harry, 4,475,282, Cl. 29-623.100.
Eisenberg, Melvin I. Male urinary device and method for applying the device. 4,475,909, Cl. 604-349.000.
Ekman, Kjell R. Coupling device. 4,475,748, Cl. 285-3.000.

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Emanuelsson, Jan G.: *See—*
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Emerson Electric Co.: *See—*
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Emhart Industries, Inc.: *See—*
Shedigian, Vandos, 4,476,516, Cl. 361-315.000.
Emile Egger & Cie SA: *See—*
Renger, Hagen, 4,475,868, Cl. 415-213.00A.
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Engel, Joseph C.: *See—*
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Davis, Steven, 4,475,453, Cl. 100-118.000.
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Herlihy, Walter C.; and Epstein, David M., 4,476,300, Cl. 536-17.400.
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Ernst Winter & Sohn GmbH & Co.: *See—*
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Essex Group, Inc.: *See—*
Brown, Samuel J., 4,476,450, Cl. 335-196.000.
McGregor, Charles W.; and Connell, James J., 4,476,279, Cl. 524-602.000.
ETA, S.A., Fabriques d'Ebauches: *See—*
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Davidson, Robert I., 4,476,059, Cl. 260-465.700.
Dubeck, Michael; and Knapp, Gordon G., 4,476,331, Cl. 568-861.000.
Nalepa, Christopher J., 4,476,332, Cl. 568-865.000.
Stahly, G. Patrick; and Stahly, Barbara C., 4,476,315, Cl. 560-20.000.
Evanitsky, Eugene S.: *See—*
Daughton, John W.; Lakatos, Andras I.; Brady, Terence W.; Bryce, James R.; Evanitsky, Eugene S.; and Baker, George E., 4,475,806, Cl. 355-14.00R.
Evans, Charles F.: *See—*
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Evans, Lyle B. Infinite speed power transmission with shiftable gear plates. 4,475,412, Cl. 74-119.000.
Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,475,304, Cl. 446-465.000.
Exxon Production Research Co.: *See—*
Cooke, Claude E., Jr., 4,475,591, Cl. 166-254.000.
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Drake, Evelyn N.; and Calcavecchio, Peter, 4,475,594, Cl. 166-294.000.
Grimes, Patrick G.; and Einstein, Harry, 4,475,282, Cl. 29-623.100.
Mathys, Georges M. K., 4,476,341, Cl. 585-512.000.
McCandlish, Larry E.; and Turaew, Larissa W., 4,476,102, Cl. 423-365.000.
F. L. Saino Manufacturing Co.: *See—*
Deutschle, Bruno J., 4,475,312, Cl. 49-360.000.
Fael S.A.: *See—*
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FAG Kugelfischer Georg Schafer & Co.: *See—*
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Fairchild Camera & Instrument Corp.: *See—*
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Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,476,366, Cl. 219-56.220.
Varshney, Ramesh C., 4,476,546, Cl. 365-200.000.
Faix, Heinz; and Schreiber, Winfried, to Daimler-Benz Aktiengesellschaft. Mounting arrangement by means of guide members for a transparent windowpane. 4,475,314, Cl. 49-374.000.
Falloon, Robert: *See—*
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Farbwerke Hoechst Aktiengesellschaft: *See—*
Hunger, Klaus; Ribka, Joachim; Weingarten, Friedrich; and Rieper, Wolfgang, 4,476,052, Cl. 260-157.000.
Farian, Gerhard, to Karl M. Reich Maschinenfabrik GmbH. Driving apparatus for fastener elements. 4,475,680, Cl. 227-130.000.
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Scalesciani, Juan B. A., 4,476,138, Cl. 424-273.00R.
Farmer, Moses G., to United States of America, National Aeronautics and Space Administration. Model mount system for testing flutter. 4,475,385, Cl. 73-147.000.
Farmer, Thomas E. Goose decoy back pack. 4,475,674, Cl. 224-153.000.
Farrow, Robert I.; and Clark, Richard L., to American Multimedia, Inc. Aligning means for tape splicer. 4,475,970, Cl. 156-159.000.
Faughnan, Brian: *See—*
Leibowitz, Marshall; Crandall, Richard; and Faughnan, Brian, 4,475,795, Cl. 350-357.000.
Faunce, Frank R., to Jaff Investment Company. Microcellular ceramic material and process for manufacture thereof. 4,475,892, Cl. 433-212.000.
Feeney, Frank J.: *See—*
Bullard, Edward M.; DiBiasi, Daniel J.; and Feeney, Frank J., 4,476,077, Cl. 264-53.000.
Fehlmann, Wolfgang: *See—*
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Feldman, Alfred P., to United States of America, Health and Human Services. Use of context to simplify two-dimensional computer input. 4,476,462, Cl. 340-711.000.
Feldmann, Joachim; and Friederichs, Otto, to WABCO Fahrzeugbremsen GmbH. Disc brake having wear compensating mechanism. 4,475,632, Cl. 188-71.400.
Felix, Raymond A., to Stauffer Chemical Company. N-Acylaminomethyl-N-cyanomethyl phosphonates. 4,476,063, Cl. 260-940.000.
Fernandez-Lanz, Enrique: *See—*
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Ferrini, Pier G.: *See—*
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Fiberflex Products, Inc.: *See—*
Rutledge, Woodrow T., Jr.; Rutledge, Russell P.; and Freeman, John E., 4,475,404, Cl. 73-827.000.
Fidia S.p.A.: *See—*
della Valle, Francesco; and Romeo, Aurelio, 4,476,119, Cl. 424-180.000.
Field, Martin J.: *See—*
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Fields, Ellis K.; and Clarke, William C., to Standard Oil Company (Indiana). Low molecular weight olefin polymers and copolymers of 3-butene-1-ol. 4,475,597, Cl. 166-305.00R.
Figiel, Francis J.; and Colbert, Aaron, to Allied Corporation. Quaternary 1,1,2-trichloro-1,2,2-trifluoro azeotropic cleaning composition. 4,476,036, Cl. 252-171.000.
Fijitsu Limited: *See—*
Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, 4,476,426, Cl. 323-226.000.
Filho, Antonio V.; and De Biase, Pietrangelo V. Exhaust manifold for an internal combustion engine, apparatus for the catalytic transformation of fuel and improved internal combustion engine. 4,475,484, Cl. 123-3.000.
Fink, Hans-Ferdi: *See—*
Fock, Jurgen; and Fink, Hans-Ferdi, 4,476,038, Cl. 252-358.000.
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; Tilch, Willi; and Siol, Werner, to Rohm GmbH. Method for strengthening fibrous articles. 4,476,182, Cl. 428-265.000.
Finke, Harry P., to Bloom Engineering Company, Inc. Adjustable flame burner. 4,475,885, Cl. 431-182.000.
Finlayson, Claude M., to NL Industries, Inc. Printing ink compositions containing organophilic clay gellant. 4,475,950, Cl. 106-20.000.
Fino, James R.; and Kirkemo, Curtis L., to Abbott Laboratories. Substituted carboxyfluoresceins. 4,476,229, Cl. 436-500.000.
Firestone Tire & Rubber Company, The: *See—*
Crawford, Ray V.; Pilarski, Regis V.; and Rumpf, Robert J., 4,475,769, Cl. 297-331.000.
Hall, James E.; and Schulz, Donald N., 4,476,240, Cl. 502-155.000.
Firth, John F.: *See—*
Clarke, John B.; and Firth, John F., 4,476,190, Cl. 428-350.000.
Fischer, Artur. Anchoring expansible fastener. 4,475,329, Cl. 52-704.000.
Fischer, Francis E.: *See—*
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Fischer, Gerhard; and Grubisic, Vatroslav, to Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V. Method and apparatus for testing vehicular wheels. 4,475,383, Cl. 73-146.000.

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Ambros, Rainer; Brenner, Norbert; Fischer, Jurgen; Paffrath, Gottfried; and Schroeder, Henrich J., 4,476,048, Cl. 252-632.000.

Fisher, Robert E., to Up-Right, Inc. Scaffold propulsion unit. 4,475,611, Cl. 180-6.500.

Fitch, John L.; and Lyle, W. D., to Mobil Oil Corporation. Borehole gravimetry system. 4,475,386, Cl. 73-151.000.

Flaig, Ulrich; and Locher, Johannes, to Robert Bosch GmbH. Fuel metering device for fuel injection pumps. 4,475,513, Cl. 123-446.000.

Flaim, Thomas A.; Stephens, Glen; and Miller, Edwin J., to General Motors Corporation. Disc brake rotor damping. 4,475,634, Cl. 188-218.00A.

Flakk, Egil, to Kva-Spil Limited. Valves. 4,475,324, Cl. 52-209.000.

Flax, Stephen W., to General Electric Company. Method for recognizing different frequency dependent scatter mechanisms in non-homogeneous tissues. 4,475,395, Cl. 73-599.000.

Flax, Stephen W.; and Glover, Gary H., to General Electric Company. Method of determining ultrasonic attenuation of tissue using reflective tomographic reconstruction. 4,475,396, Cl. 73-599.000.

Flax, Stephen W., to General Electric Company. Method and means for improving image in an ultrasonic scanning system. 4,475,400, Cl. 73-631.000.

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Riley, James K.; and Flax, Stephen W., 4,475,397, Cl. 73-599.000.

Fletcher, Archibald W.: *See*—
Atwood, George E.; Cochran, Douglas E.; Sadan, Abraham; Burnett, Charles; Tyree, Phillip O.; and Fletcher, Archibald W., 4,475,771, Cl. 299-4.000.

Fleury, George J., Jr. Multi-staple cartridge for surgical staplers. 4,475,679, Cl. 227-19.000.

FMC Corporation: *See*—
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Weeks, Raymond L., 4,475,648, Cl. 198-830.000.

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Fohl, Artur, to Repa Feinstanzwerk GmbH. Seat belt drive device. 4,475,745, Cl. 280-804.000.

Fohl, Artur, to Repa Feinstanzwerk GmbH. Rotary electrical connection. 4,475,779, Cl. 339-5.00M.

Foller, Werner, to Gestra Kondensatableiter GmbH & Co. KG. Float controlled condensate discharge device. 4,475,569, Cl. 137-194.000.

Fontalbert, Terry V.: *See*—
McDonald, J. Barrett; and Fontalbert, Terry V., 4,476,001, Cl. 204-228.000.

Foran, Michael T.: *See*—
Sapienza, Richard S.; Slegeir, William A.; and Foran, Michael T., 4,476,103, Cl. 423-417.000.

Forbes, Frank, to Dravo Corporation. Method of and apparatus for the mixing and processing of fragile material and fragmentel solids. 4,475,987, Cl. 202-99.000.

Ford, Eric H., to Texas Instruments Incorporated. Integrated optical beam expander. 4,475,793, Cl. 350-172.000.

Ford Motor Company: *See*—
Colovas, Denny D.; Rutkowski, David J.; and Ver Ploeg, Wendell J., 4,475,380, Cl. 73-114.000.
Kordomenos, Panagiotis I., 4,476,259, Cl. 523-400.000.
Kovacs, Bela V.; Nowicki, Roman M.; and Stickels, Charles A., 4,475,956, Cl. 148-3.000.
Vogt, Hans; Kloppe, Herbert; and Spiegel, Erwin, 4,475,765, Cl. 296-210.000.

Ford-Werke Aktiengesellschaft: *See*—
Dietzsch, Kurt; Oess, Hans-Dieter; Kniele, Wolfgang; Zander, Joachim; and Jeske, Gustav, 4,475,445, Cl. 98-2.050.

Forry, John S.; and Garrick, John R., to Armstrong World Industries, Inc. Building materials comprising non-woven webs. 4,476,175, Cl. 428-170.000.

Forster, Franz, to Linde Aktiengesellschaft. Axial piston machine with suction line impurity trap. 4,475,443, Cl. 91-499.000.

Forth, Hans-Joachim; and Heisig, Rolf, to Leybold-Heraeus GmbH. Refrigerator with pneumatic and working gas-supply control. 4,475,345, Cl. 62-6.000.

Fory, Werner: *See*—
Meyer, Willy; and Fory, Werner, 4,476,321, Cl. 564-89.000.

Foster, Bryan D.; and Stapleton, Del G., to Norton Company. Lavatory setter. 4,475,887, Cl. 432-258.000.

Foster, Daniel S., to Knoedler Manufacturers, Inc. Seat suspension system. 4,475,707, Cl. 248-636.000.

Fotland, Richard A.: *See*—
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Fotomec-San Marco S.p.A.: *See*—
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Foughty, Joan S., to Robbins & Myers, Inc. Water pump and gear box therefor. 4,475,872, Cl. 417-315.000.

Fox, Irwin, to Samuels, Alvin; and Samuels, David, part interest to each. Use of magnetic separation in scavenging hydrogen sulfide. 4,476,027, Cl. 210-695.000.

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Hista, Jean C., 4,476,087, Cl. 376-285.000.

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Frank, Carl A., to Frank, Claire D.; Frank, Gerald A.; Spisak, Anne; Palermo, John J.; Parmelee, G. Kendall; and Burns, Susan L. Doorbarring lock apparatus. 4,475,364, Cl. 70-139.000.

Frank, Claire D.: *See*—
Frank, Carl A., 4,475,364, Cl. 70-139.000.

Frank, Gerald A.: *See*—
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Frank, Laurence J.: *See*—
Dragonette, Louis R.; Frank, Laurence J.; and Numrich, Susan K., 4,476,549, Cl. 367-13.000.

Frank & Ockrent Limited: *See*—
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Franke, Earnest A.; and Highton, Frederick J., to General Electric Company. Radio transceiver. 4,476,575, Cl. 455-76.000.

Franks, Lawrence A., to Burr Oak Tool & Gauge Company. Power assist uncoiler. 4,475,695, Cl. 242-54.00R.

Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V.: *See*—
Fischer, Gerhard; and Grubisic, Vatroslav, 4,475,383, Cl. 73-146.000.

Frazier, Henry F.: *See*—
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Freeman, John E.: *See*—
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Fremstad, Gregory E. Fillet for picture frame. 4,475,296, Cl. 40-152.000.

Fresia, E. James, to Sprague Electric Company. Aluminum electrolytic capacitor. 4,476,517, Cl. 361-327.000.

Friederichs, Otto: *See*—
Feldmann, Joachim; and Friederichs, Otto, 4,475,632, Cl. 188-71.400.

Friedman, Robert H., to Getty Oil Company. Method for profile control and conformance correction. 4,475,593, Cl. 166-281.000.

Fritz, Hans-Ulrich. System for manufacturing and mounting. 4,475,642, Cl. 198-345.000.

Fritzsche, Dodge & Olcott, Inc.: *See*—
Willis, Brian J.; and Zazula, Teodosij J., 4,476,040, Cl. 252-522.00R.

Fruchter, Lawrence C. Storage and individualized dosage container. 4,475,654, Cl. 206-538.000.

Fuchs, Ernst; Rimmele, Karl; and Bieri, Hans, to Mecapec S.A. Shear for cutting rod-form material. 4,475,423, Cl. 83-199.000.

Fuderer, Andrija, to Union Carbide Corporation. Selective adsorption process. 4,475,929, Cl. 55-25.000.

Fujawa, Charles S.: *See*—
Masteller, Sara B.; and Fujawa, Charles S., 4,475,493, Cl. 123-179.00B.

Fuji Electric Co., Ltd.: *See*—
Yoshida, Masahiro; and Oka, Masahiko, 4,476,399, Cl. 307-44.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Nakamura, Hiroyuki; Kasai, Yoshiaki; and Ohgami, Masaaki, 4,475,503, Cl. 123-339.000.
Suzuki, Hitoshi; and Hara, Kazuo, 4,475,512, Cl. 123-440.000.

Fuji Photo Film Co., Ltd.: *See*—
Horie, Seiji; Nakano, Junji; and Sato, Hideo, 4,476,208, Cl. 430-58.000.
Hosoi, Noriyuki, 4,476,211, Cl. 430-137.000.
Kakimi, Fujio, 4,476,212, Cl. 430-137.000.
Kiritani, Masataka; and Asao, Yasuzi, 4,476,153, Cl. 427-40.000.
Matsufuji, Akihiro; Umemura, Shizuo; Aonuma, Masashi; Miyatsuka, Hajime; and Kitamoto, Tatsuji, 4,475,946, Cl. 75-0.5AA.
Matsumoto, Hiroshi, 4,475,460, Cl. 101-465.000.
Mizuno, Chiaki; and Akashi, Goro, 4,476,177, Cl. 428-206.000.
Nagao, Makoto; Nahara, Akira; and Arai, Yoshihiro, 4,476,000, Cl. 204-192.00M.
Ogawa, Masashi; Ishigaki, Kunio; Nakamura, Taku; and Iwasaki, Nobuyuki, 4,476,218, Cl. 430-539.000.
Ohba, Hisao; Oda, Kazutaka; Sakaki, Hirokazu; Shirai, Akira; and Ohashi, Azusa, 4,476,006, Cl. 204-17.000.
Ono, Yoshihiro; Nabara, Akira; and Ikeda, Tomoaki, 4,476,195, Cl. 428-695.000.
Oshikoshi, Yuji; and Agano, Toshitaka, 4,476,497, Cl. 358-298.000.
Sakanoue, Kei; Hirano, Shigeo; Ueda, Takehiko; and Adachi, Keiichi, 4,476,219, Cl. 430-542.000.

Fuji Xerox Co., Ltd.: *See*—
Moriguchi, Fujio, 4,476,421, Cl. 318-696.000.
Moriguchi, Haruhiko; Inui, Toshiharu; and Ohmori, Takashi, 4,476,179, Cl. 428-216.000.
Wako, Shoji, 4,476,473, Cl. 346-155.000.

Fujii, Masahiro: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.

Fujii, Toshihiko: *See*—
Tsumaki, Masahiro; Fujii, Toshihiko; Kamiya, Hideaki; Suzuki, Haruo; and Goto, Yoshihiro, 4,475,462, Cl. 105-149.000.

Fujimoto, Masaya: *See*—
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Shibata, Masahiro; Saito, Toshitaka; and Yamakawa, Mitihiro, 4,476,008, Cl. 204-425.000.
Fujimura, Toshio: *See*—
Nagami, Hayashi; Taniguchi, Yoshisada; Otsu, Shinpei; Fujimura, Toshio; and Shimizu, Keizo, 4,476,556, Cl. 369-258.000.
Fujino, Masahiko; and Wakimasu, Mitsuhiro, to Takeda Chemical Industries, Ltd. Method for protecting amino group and restoring the same. 4,476,051, Cl. 260-112.50R.
Fujirebio Kabushiki Kaisha: *See*—
Kimura, Tokusuke; Kurosu, Fumio; Inouchi, Toshitsugu; and Komatsu, Masana, 4,476,109, Cl. 424-85.000.
Fujisawa, Hiromichi; Endo, Hirohide; and Komatsu, Hitoshi, to Hitachi, Ltd. Multilevel signal compression method. 4,476,495, Cl. 358-262.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,476,050, Cl. 260-112.50R.
Fujitsu Limited: *See*—
Miyasaka, Kiyoshi, 4,476,547, Cl. 365-205.000.
Ogawa, Tsutomu, 4,476,375, Cl. 219-121.0LN.
Fujitsu Ten Limited: *See*—
Ito, Tatsuo; Hoda, Kazuyuki; and Mizuno, Masataka, 4,476,579, Cl. 455-147.000.
Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, 4,476,426, Cl. 323-226.000.
Fujiwara, Mitsuru: *See*—
Kasuya, Katsuhiko; Mori, Hidetomo; Fujiwara, Mitsuru; and Matsunaga, Tetsuzo, 4,475,878, Cl. 418-201.000.
Fujiwara, Mituo: *See*—
Taya, Shunroku; and Fujiwara, Mituo, 4,476,393, Cl. 250-492.200.
Fujiwara, Yukinari, to Hitachi Denshi Kabushiki Kaisha. System for detecting abnormal condition of high frequency output signal in its power level. 4,476,437, Cl. 330-138.000.
Fukada, Tomihiro: *See*—
Kambe, Mitsuru; and Fukada, Tomihiro, 4,475,866, Cl. 415-112.000.
Fukae, Yasuo, to Nissan Motor Company, Limited. Orifice of exhaust gas recirculation system. 4,475,525, Cl. 123-568.000.
Fukami, Tadashi, to Oken Seiko Co., Ltd. Coils of coreless motor and method of manufacturing the same. 4,476,409, Cl. 310-198.000.
Fukatsu, Yasushi: *See*—
Ariizumi, Syoji; Fukatsu, Yasushi; and Masuoka, Fujio, 4,475,964, Cl. 148-187.000.
Fukatsu, Yoshiaki; Kurahashi, Takashi; Matsui, Kazuma; and Ito, Hiroki, to Nippondenso Co., Ltd. Windshield wiper control device. 4,476,419, Cl. 318-444.000.
Fukaya, Hiroyasu: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,476,532, Cl. 364-431.050.
Fukuhara, Toru; and Saegusa, Takashi, to Nippon Kogaku K.K. Photometering device for obtaining exposure information. 4,476,383, Cl. 250-214.00P.
Fukuhsima, Naoto: *See*—
Iwata, Kazuroh; Fukuhsima, Naoto; and Hidaka, Kunihiko, 4,475,635, Cl. 188-282.000.
Fukumura, Keiichi: *See*—
Sakakibara, Yoshiyasu; and Fukumura, Keiichi, 4,475,485, Cl. 123-41.050.
Fukuoka, Takashi; and Nagao, Yoshiaki, to Kioritz Corporation. Joint-pipe for carburetor. 4,475,487, Cl. 123-73.00V.
Fuller, Timothy J.: *See*—
Seidel, Martin P.; and Fuller, Timothy J., 4,476,193, Cl. 428-531.000.
Fure, Barbara J.: *See*—
Douglas, Richard B.; Fure, Barbara J.; and Lai, Juey H., 4,476,217, Cl. 430-326.000.
Furgal, Henry P.: *See*—
Verboom, Gilles M.; Welsh, Thomas L.; and Furgal, Henry P., 4,475,835, Cl. 401-132.000.
Furukawa, Junichi; Nakagawa, Yasuhiko; Nakai, Meroji; and Hamai, Kyugo, to Nissan Motor Company, Limited. System for forcefully igniting sprayed fuel of a diesel engine during engine starting. 4,475,492, Cl. 123-179.0BG.
Fuse, Mamoru, to Nippon Electric Co., Ltd. High withstand voltage structure of a semiconductor integrated circuit. 4,476,480, Cl. 357-44.000.
Gaertner, Van R., to Monsanto Company. Herbicidal α-hydroxy phosphonates. 4,475,943, Cl. 71-86.000.
Gagliani, John: *See*—
Long, John V.; and Gagliani, John, 4,476,254, Cl. 521-180.000.
Gagne, Robert R.; and Marrocco, Matthew L., III, to Maxdem Incorporated. Method and apparatus for separating oxygen from a gaseous mixture. 4,475,994, Cl. 204-129.000.
Gahle, Hans-Juergen, to ITT Industries, Inc. Method of making a monolithic integrated circuit comprising at least one pair of complementary field-effect transistors and at least one bipolar transistor. 4,475,279, Cl. 29-577.00C.
Gaillard, Roger: *See*—
Garcia, Philippe; and Gaillard, Roger, 4,475,889, Cl. 433-103.000.
Gaiser, Robert F., to Bendix Corporation, The. Master cylinder. 4,475,338, Cl. 60-562.000.
Galabov, Peter K.; and Makedonski, Boris G., to Centralen Mashinostroitelen Institute. Inductor for magnetic abrasive polishing. 4,475,315, Cl. 51-72.00R.
Galasso, Francis S.: *See*—
Veltri, Richard D.; and Galasso, Francis S., 4,476,164, Cl. 427-249.000.
Veltri, Richard D.; and Galasso, Francis S., 4,476,178, Cl. 428-215.000.
Gallemore, Elbert M. Computer-controlled synthetic waveform generator. 4,476,520, Cl. 363-43.000.
Galli, Paolo: *See*—
Mayr, Adolfo; Galli, Paolo; Susa, Ermanno; Di Drusco, Giovanni; and Giachetti, Ettore, 4,476,289, Cl. 526-125.000.
Gallup, Brian M.: *See*—
L'Abbe, Richard; St. Laurent, Andre M.; Newman, James A.; and Gallup, Brian M., 4,475,248, Cl. 2-2.500.
Gangwer, James R.: *See*—
Deindoerfer, Fred H.; and Gangwer, James R., 4,476,231, Cl. 436-534.000.
Garcia, Philippe; and Gaillard, Roger. Speed-increasing device for a dental handpiece. 4,475,889, Cl. 433-103.000.
Gardiner, William P.: *See*—
Schmitt, Richard P.; Ciccone, Vincent J.; and Gardiner, William P., 4,476,015, Cl. 210-93.000.
Garlick, Ronald G.; and Golman, Roman, to Robertshaw Controls (Australia) Pty. Limited. Mixing valve. 4,475,684, Cl. 236-12.140.
Garrett Corporation, The: *See*—
Glaser, Jerry; Sirridge, Henry A.; and Ibach, Ernest J., 4,475,824, Cl. 384-306.000.
Kalman, Gabor, 4,476,424, Cl. 318-832.000.
Garrick, John R.: *See*—
Forry, John S.; and Garrick, John R., 4,476,175, Cl. 428-170.000.
Garvan Research Development Ltd., The: *See*—
Kraegen, Edward W.; Lazarus, Leslie; Bell, David J.; and Chisholm, Donald J., 4,475,901, Cl. 604-67.000.
Gasper, Alton J., to Minnesota Mining and Manufacturing Company. Latex-reinforced polyurethane sewer sealing composition. 4,476,276, Cl. 524-500.000.
Gatsis, John G., to UOP Inc. Process for deashing primary coal liquids. 4,476,012, Cl. 208-251.00R.
Gaudin, Daniel; and Le Gars, Philippe, to Thomson-CSF. Device for detecting the optimum anode load impedance of a tube transmitter in a high frequency transmission chain. 4,476,578, Cl. 455-115.000.
Geer, Susan M.: *See*—
Toner, John L.; Daniel, Daniel S.; and Geer, Susan M., 4,476,007, Cl. 204-417.000.
Geke, Jurgen: *See*—
Wilk, Hans-Christoph; and Geke, Jurgen, 4,476,269, Cl. 524-297.000.
Gelardi, Paul J.: *See*—
MacLeod, Robert B., Jr.; Landry, Vincent E.; and Gelardi, Paul J., 4,475,700, Cl. 242-197.000.
Gellert, Dale A., to Procter & Gamble Company, The. Absorbent devices. 4,475,911, Cl. 604-367.000.
General Acoustics Corporation: *See*—
Smith, David A., 4,475,867, Cl. 415-119.000.
General Electric Company: *See*—
Burns, Richard D.; and Wesseldyk, Albert J., 4,476,082, Cl. 264-288.400.
Chambers, Gregory R.; and Talley, John J., 4,476,329, Cl. 568-804.000.
Dallavia, Anthony J., Jr.; Van Vleck, Gordon T.; and Traver, Frank J., 4,476,241, Cl. 502-156.000.
Eckberg, Richard P., 4,476,166, Cl. 427-387.000.
Flax, Stephen W., 4,475,395, Cl. 73-599.000.
Flax, Stephen W.; and Glover, Gary H., 4,475,396, Cl. 73-599.000.
Flax, Stephen W., 4,475,400, Cl. 73-631.000.
Franke, Earnest A.; and Highion, Frederick J., 4,476,575, Cl. 455-76.000.
Hale, Alan A., 4,475,851, Cl. 407-113.000.
Honsinger, Vernon B., 4,476,408, Cl. 310-156.000.
Liu, Nan-I, 4,476,274, Cl. 524-445.000.
Mark, Victor, 4,476,294, Cl. 528-125.000.
Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, 4,475,280, Cl. 29-577.00C.
Riley, James K.; and Flax, Stephen W., 4,475,397, Cl. 73-599.000.
Roedel, George F., 4,476,291, Cl. 528-14.000.
Thomson, Benjamin M., 4,475,363, Cl. 68-23.300.
Vaughn, Howard A., Jr., 4,476,281, Cl. 524-767.000.
Verbicky, John W., Jr.; and O'Neil, Elbridge A., Jr., 4,476,309, Cl. 548-480.000.
General Foods Corporation: *See*—
Hardie-Muncy, Darlene A.; Coker, Guy C.; and Wauters, Ronald P., 4,476,145, Cl. 426-285.000.
Shoaf, Myron D.; and Basile, Peter A., 4,475,448, Cl. 99-323.100.
General Motors Corporation: *See*—
Arlauskas, Alfonsas; and Augunas, Algis G., 4,475,754, Cl. 292-336.300.
Atkins, Terrance J.; Field, Martin J.; and Makusij, Andrew J., 4,475,516, Cl. 123-470.000.
Crawford, Ray V.; Pilarski, Regis V.; and Rumpf, Robert J., 4,475,769, Cl. 297-331.000.
Flaim, Thomas A.; Stephens, Glen; and Miller, Edwin J., 4,475,634, Cl. 188-218.00A.
Gray, Ronald N.; and Davis, Ronald G., 4,476,449, Cl. 335-138.000.

Griffin, Michael D.; and Lamirande, Donald J., 4,476,068, Cl. 261-65.000.

Kessler, David R., 4,475,486, Cl. 123-52.00M.

Licata, Joseph P.; Lehnhoff, Richard N.; and Terkoski, Frank J., 4,476,416, Cl. 318-283.000.

Lystad, Leonard A., 4,475,263, Cl. 15-250.190.

Talley, Paul E.; and Rochford, Harry T., 4,475,975, Cl. 156-234.000.

George, Eric: *See*—
Kane, Odile B.; George, Eric; Tromp, Chantal L.; and Goll, Serge, 4,476,221, Cl. 435-2.000.

George, J. Anthony: *See*—
Reed, C. Lawson; and George, J. Anthony, 4,475,713, Cl. 251-214.000.

Georges, Michael P. Data cartridge tape drive assembly. 4,476,504, Cl. 360-93.000.

Gerard, Jean-Louis; and Le Marchand, Claude, to Societe Anonyme DBA. Disc brake including a movable assembly. 4,475,633, Cl. 188-73.450.

Gerber, James E.; Harwood, Jon W.; and Hay, Clinton R., to APX Group, Inc. Universal muffler assembly. 4,475,623, Cl. 181-243.000.

Gerhardt, Glenn E.: *See*—
Brasen, Wallace R.; Gerhardt, Glenn E.; and Gregorovich, Basil V., 4,476,270, Cl. 524-364.000.

Gerhart, Roland T., to IEM Ltd. Fireplace unit. 4,475,531, Cl. 126-121.000.

Gerling, Voldemar E.: *See*—
Yakubovich, Solomon L.; Kotsen, Marat E.; Golubnichy, Vladislav V.; Gerling, Voldemar E.; and Stepanov, Jury N., 4,476,388, Cl. 250-361.00R.

Gerritsen, Frederik H.; and Janssen, Daniel J. G., to U.S. Philips Corporation. Telephone subscriber line looping circuit. 4,476,352, Cl. 179-81.00R.

Gerstner, Norman G. Roller equipped earthworking member. 4,475,602, Cl. 172-713.000.

Geshuri Laboratories Ltd.: *See*—
Bakel, Izhak, 4,475,942, Cl. 71-86.000.

Gestra Kondensatableiter GmbH & Co. KG: *See*—
Foller, Werner, 4,475,569, Cl. 137-194.000.

Getty Oil Company: *See*—
Friedman, Robert H., 4,475,593, Cl. 166-281.000.

Ghadiri, Mojtaba: *See*—
Clift, Roland; Ghadiri, Mojtaba; and Cooke, Michael J., 4,475,931, Cl. 55-77.000.

GHT, Gesellschaft fuer Hochtemperaturreaktor-Technik mbH: *See*—
Muller-Frank, Ulrich; Reutler, Herbert; and Ullrich, Manfred, 4,476,089, Cl. 376-381.000.

Giachetti, Ettore: *See*—
Mayr, Adolfo; Galli, Paolo; Susa, Ermanno; Di Drusco, Giovanni; and Giachetti, Ettore, 4,476,289, Cl. 526-125.000.

Giamei, Anthony F.; Salkeld, Richard W.; and Anderson, Neal P., to United Technologies Corporation. Casting a metal single crystal article using a seed crystal and a helix. 4,475,582, Cl. 164-122.200.

Gianelo, Angelo. Method and apparatus for compacting containers. 4,475,449, Cl. 100-42.000.

Gibson, Richard L., to Season-All Industries, Inc. Custodial latch assembly for windows and the like. 4,475,311, Cl. 49-176.000.

Giddings, Brandford E.; and Jorkasky, Richard J., II, to Standard Oil Company, The. Metal dodecylbenzenesulfonates as processing aids for polycarbonates. 4,476,275, Cl. 525-462.000.

Gilbert, Barrie, to Analog Devices, Inc. Trigonometric function generator. 4,476,538, Cl. 364-817.000.

Gilbert, Everett E., to United States of America, Army. 1,3,5,7-Tetranitroxyadamantane. 4,476,060, Cl. 260-466.000.

Gill, Michael: *See*—
Rogers, Mark C.; and Gill, Michael, 4,475,537, Cl. 126-438.000.

Gillette Company, The: *See*—
Gruner, George P., 4,475,882, Cl. 431-111.000.

Girgis, Mikhail M., to PPG Industries, Inc. Resorcinol-aldehyde resin composition for an adhesive system to be applied to glass fibers. 4,476,191, Cl. 428-378.000.

Gist-Brocades N.V.: *See*—
Gootjes, Johan; and van de Kamp, Hendricus H., 4,476,129, Cl. 424-250.000.

Glaser, Jerry; Sirridge, Henry A.; and Ibach, Ernest J., to Garrett Corporation, The. Bearing foil stiffener. 4,475,824, Cl. 384-306.000.

Glasl, Johann: *See*—
Ploog, Uwe; Wegener, Ingo; Glasl, Johann; Erwied, Werner; Bartnick, Bernhard; and Hofer, Rainer, 4,476,037, Cl. 252-354.000.

Glasstech, Inc.: *See*—
Nitschke, John S., 4,475,937, Cl. 65-163.000.

Glaxo Group Limited: *See*—
Bays, David E.; and Clitherow, John W., 4,476,126, Cl. 424-248.560.

Gleason, George W.: *See*—
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,476,533, Cl. 364-473.000.

Gleich, Jerome E. Scaffold bracket. 4,475,626, Cl. 182-150.000.

Glock, Gaston. Spade. 4,475,757, Cl. 294-51.000.

Glover, Gary H.: *See*—
Flax, Stephen W.; and Glover, Gary H., 4,475,396, Cl. 73-599.000.

Goff, Willie, Jr.; and Williams, Errol R., Jr., to International Business Machines Corporation. Capacitive metering means for uniform ribbon feed and take-up mechanism. 4,475,829, Cl. 400-232.000.

Golay, Kenneth W. Air cleaning magnetic attachment for a welder's face mask. 4,475,249, Cl. 2-8.000.

Goldammer, Georg, to Schubert & Salzer Aktiengesellschaft Maschinenfabrik. Suction duct for textile machines. 4,475,269, Cl. 19-80.00R.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Toy vehicle apparatus for weight pulling. 4,475,304, Cl. 446-465.000.

Goldman, Robert N., to Light Signatures, Inc. Secure transaction card and verification system. 4,476,468, Cl. 340-825.034.

Goll, Serge: *See*—
Kane, Odile B.; George, Eric; Tromp, Chantal L.; and Goll, Serge, 4,476,221, Cl. 435-2.000.

Gollub, Klaus, to Bergham Export GmbH. Joint assembly for casing cells. 4,476,066, Cl. 261-29.000.

Golman, Roman: *See*—
Garlick, Ronald G.; and Golman, Roman, 4,475,684, Cl. 236-12.140.

Golubnichy, Vladislav V.: *See*—
Yakubovich, Solomon L.; Kotsen, Marat E.; Golubnichy, Vladislav V.; Gerling, Voldemar E.; and Stepanov, Jury N., 4,476,388, Cl. 250-361.00R.

Gomi, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Transistor circuit. 4,476,443, Cl. 330-288.000.

Gonella, Jacques, to Sigma Tau Indistrie Farmaceutiche Riunites, p.A. Thiolic derivatives of erythromycin having therapeutic activity, and pharmaceutical compositions containing them. 4,476,120, Cl. 424-180.000.

Goodman, Joseph R.: *See*—
Asick, John C.; Douty, George H.; Goodman, Joseph R.; Jones, Kermit M., Jr.; Landis, John M.; Snyder, Clair W., Jr.; Woratyla, John A.; and Zell, Dale R., 4,475,781, Cl. 339-17.0LM.

Goodyear Tire & Rubber Company, The: *See*—
Christie, William C., 4,475,384, Cl. 73-146.000.
Pengilly, Brian W., 4,476,272, Cl. 524-398.000.

Gootjes, Johan; and van de Kamp, Hendricus H., to Gist-Brocades N.V. 4-[2-[Bis(halophenyl)methoxy]-ethyl]-α-(substituted phenyl)-1-piperazinealkanol derivatives, processes for their preparation and pharmaceutical preparations containing them. 4,476,129, Cl. 424-250.000.

Goranflo, Richard J. Method and system for preheating fuel. 4,475,523, Cl. 123-557.000.

Gorbatenko, Igor V.: *See*—
Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,475,587, Cl. 165-140.000.

Gordon, Roger E.; and Amin, Sanjay I., to Upjohn Company, The. Crystallization of ibuprofen. 4,476,248, Cl. 562-494.000.

Gores, Carolyn C.: *See*—
Gores, Kenneth W.; and Gores, Carolyn C., 4,475,888, Cl. 433-42.000.

Gores, Kenneth W.; and Gores, Carolyn C. Anteriorly joined dental trays. 4,475,888, Cl. 433-42.000.

Goschke, Richard; Ferrini, Pier G.; and Sallmann, Alfred, to Ciba-Geigy Corporation. Acylquinolinone derivatives, and antiallergic preparations and methods of inhibiting allergic reactions using them. 4,476,132, Cl. 424-258.000.

Gosselin, Gilles J. M.: *See*—
Imbach, Jean-Louis; and Gosselin, Gilles J. M., 4,476,301, Cl. 536-27.000.

Gostic, William J.: *See*—
Rhemer, Chris C.; Hughes, Scott E.; and Gostic, William J., 4,475,980, Cl. 156-603.000.

Goto, Kunio: *See*—
Nishino, Hiroshi; Ogino, Fumiichi; Masuko, Tetsuo; Goto, Kunio; and Takahashi, Masao, 4,476,169, Cl. 428-34.000.

Goto, Yoshihiro: *See*—
Tsumaki, Masahiro; Fujii, Toshihiko; Kamiya, Hideaki; Suzuki, Haruo; and Goto, Yoshihiro, 4,475,462, Cl. 105-149.000.

Gotoh, Ichisei: *See*—
Yamawaki, Satoshi; Sugihara, Atsushi; Kobayashi, Yasushi; Ishida, Hiroshi; Kuramasu, Yukio; and Gotoh, Ichisei, 4,475,960, Cl. 148-26.000.

Gotoh, Takaharu: *See*—
Nakajima, Yasuo; Nagumo, Shinichi; Hase, Yoshifumi; and Gotoh, Takaharu, 4,475,739, Cl. 277-216.000.

Gottling, Helmut: *See*—
Brausfeld, Walter; and Gottling, Helmut, 4,475,572, Cl. 137-625.230.

Gough, David S.; and Sullivan, John V., to Commonwealth Scientific and Industrial Research Organization. Atomic spectral lamp. 4,476,413, Cl. 313-550.000.

Goulter, Victor H. Workbench with multiple-clamping arrangement. 4,475,727, Cl. 269-88.000.

Governale, Bernard C., to Peachtree Doors, Inc. Locking arrangement for sliding doors. 4,475,313, Cl. 49-370.000.

Goyal, Prashant K.: *See*—
Lovgren, Ernest G.; and Goyal, Prashant K., 4,475,271, Cl. 19-105.000.

Goyert, Wilhelm: *See*—
Salzburg, Herbert; Meyborg, Holger; Goyert, Wilhelm; and Barnes, James M., 4,476,253, Cl. 521-176.000.

Graham, Anne M.: *See*—
Pesa, Frederick A.; and Graham, Anne M., 4,476,247, Cl. 502-325.000.

Gravely, David A., to Pyrochem, Inc. Burner and incinerator system for liquid waste. 4,475,466, Cl. 110-238.000.

Gray, Robert L., Jr.; and Holcombe, Thomas C., to Union Carbide Corporation. N-Paraffin-isoparaffin separation process using wash of recycle purge gas. 4,476,345, Cl. 585-820.000.

Gray, Ronald N.; and Davis, Ronald G., to General Motors Corporation. Switch actuator for a remote control unit. 4,476,449, Cl. 335-138.000.

Grayhill, Inc.: *See*—
Mital, Dennis M., 4,476,355, Cl. 200-5.00A.

Graziano, Frank D.; and Kuziemka, Edmund J., to Material Sciences Corporation. Organopolysiloxane coating compositions. 4,476,264, Cl. 523-435.000.

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Watanabe, Ryozo; Kawasumi, Keiichi; Maeda, Shoichi; and Shoji, Takashi, 4,476,093, Cl. 422-61.000.

Green, James A., II: *See*—
Young, Donald C.; and Green, James A., II, 4,476,113, Cl. 424-161.000.

Green, Martin L.: *See*—
Bader, Frank E.; and Green, Martin L., 4,475,983, Cl. 156-656.000.

Greenbaum, Elias, to United States of America, Energy. Process for photosynthetically splitting water. 4,476,105, Cl. 423-648.00R.

Greening Donald Co. Ltd.: *See*—
Collier, John D., 4,475,656, Cl. 211-41.000.

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Brasen, Wallace R.; Gerhardt, Glenn E.; and Gregorovich, Basil V., 4,476,270, Cl. 524-364.000.

Greiner, Max; and Konrath, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,475,521, Cl. 123-502.000.

Greul, Helmut W.: *See*—
Walter, Leo; and Greul, Helmut W., 4,475,780, Cl. 339-17.00C.

Grieb, Hubert; and Klussmann, Wilfried, to MTU Motoren-Und Turbinen Union Munchen GmbH. Heat exchanger. 4,475,586, Cl. 165-134.00R.

Griffin, Michael D.; and Lamirande, Donald J., to General Motors Corporation. Progressive throttle positioning system. 4,476,068, Cl. 261-65.000.

Griffin, Robert B. Tamper-indicating container assembly. 4,475,661, Cl. 215-366.000.

Griffith, James B.: *See*—
Sanborn, Harold C.; and Griffith, James B., 4,476,194, Cl. 428-585.000.

Grigorian, Alfred N.; Kovalev, Andrei P.; Lalov, Vitaly V.; Makarov, Nikolai D.; and Katrush, Rady V., to Vsesojuzny Nauchnoissledovatelsky Institut Sinteza Belkov. Apparatus for continuously disintegrating cells of microorganisms. 4,476,225, Cl. 435-287.000.

Grimado, Philip B.; Holt, Vernon E.; and Osifchin, Nicholas, to AT&T Bell Laboratories. Control system for efficient intermittent operation of building HVAC equipment. 4,475,685, Cl. 236-46.00R.

Grimes, Mark W.: *See*—
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Grimes, Patrick G.; and Einstein, Harry, to Exxon Research & Engineering Co. Method of constructing an improved electrochemical cell. 4,475,282, Cl. 29-623.100.

Grimm, Rainer; Bohm, Horst; and Schafer, Peter, to Rockwell-Golde GmbH. Sliding roof for automobiles. 4,475,767, Cl. 296-221.000.

Grob & Co. Aktiengesellschaft: *See*—
Baumann, Hans, 4,475,574, Cl. 139-92.000.

Gross, Werner: *See*—
Hascher-Reichl, Asta; Kubach, Hans; and Gross, Werner, 4,475,690, Cl. 239-585.000.

Grow, Carolyn P.: *See*—
Crean, Peter A.; D'Ortenzio, Remo J.; and Grow, Carolyn P., 4,476,542, Cl. 364-900.000.

Grubisic, Vatroslav: *See*—
Fischer, Gerhard; and Grubisic, Vatroslav, 4,475,383, Cl. 73-146.000.

Grundfos A/S: *See*—
Jensen, Niels D.; and Nielsen, Kurt F., 4,475,873, Cl. 417-422.000.

Gruner, George P., to Gillette Company, The. Gas mantle with aspirated pilot light. 4,475,882, Cl. 431-111.000.

Grunwald, Werner; and Schmatz, Jurgen, to Robert Bosch GmbH. Wide-gap ignition distributor. 4,475,491, Cl. 123-146.50A.

Gruppo Lepetit S.p.A.: *See*—
Coronelli, Carolina; Borghi, Angelo; Pirali, Giorgio; and Mistrello, Giovanni, 4,476,111, Cl. 424-119.000.

GTE Laboratories Incorporated: *See*—
Auborn, James J., 4,476,204, Cl. 429-196.000.

GTE Products Corporation: *See*—
Liang, Anthony; and Cox, Ronald W., 4,475,959, Cl. 148-24.000.

Gulczynski, Zdzislaw. Push-pull power amplifier. 4,476,441, Cl. 330-262.000.

Gulf Oil Corp.: *See*—
York, Earl D.; and Porter, Darrell D., 4,475,965, Cl. 149-21.000.

Guptill, Richard P.: *See*—
Kuhlmann, Erven J.; Guptill, Richard P.; Jung, Dick Y.; and Zang, Hyung K., 4,476,009, Cl. 208-8.0LE.

Guse, Rolf: *See*—
Promoli, Johann C.; Guse, Rolf; and Tabibi, Sohrab, 4,475,331, Cl. 57-263.000.

Gylland, E. Frederick, Jr.: *See*—
Paton, H. Neil; Skilling, John B.; Sandya, Jeffery P.; and Gylland, E. Frederick, Jr., 4,475,722, Cl. 267-9.00C.

H & H Oliver Corporation: *See*—
Oliver, H. LeRoy, 4,475,859, Cl. 411-361.000.

Haarbosch, Willem R., to U.S. Philips Corporation. Stowage case for an electric cord. 4,475,649, Cl. 206-328.000.

Habetz, Hubert: *See*—
Diehl, Herbert; Pelster, Heinrich; and Habetz, Hubert, 4,476,320, Cl. 560-103.000.

Haddad, Arthur K. Toggle actuated bench clamp. 4,475,728, Cl. 269-94.000.

Hader, Helmut. Dental attachment for fixing dental prostheses. 4,475,891, Cl. 433-181.000.

Haeno, Akira: *See*—
Watanabe, Kazuo; Kominami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, 4,476,502, Cl. 360-65.000.

Haertl, Christof, to Siemens Aktiengesellschaft. Hearing aid device to be worn in the ear. 4,476,353, Cl. 179-107.00E.

Hagen, Rolf; and Weidner, Peter, to Siemens Aktiengesellschaft. Method and circuit arrangement for transmitting communication signals between switching centers of first and second switching networks operating with different transmission procedures. 4,476,347, Cl. 178-3.000.

Haines, Kenneth R., to Waddington & Duval Holdings Limited. Press taps. 4,475,566, Cl. 137-68.00R.

Hair, Michael L.: *See*—
Croucher, Melvin D.; Duff, James M.; Hair, Michael L.; Lok, Kar P.; and Wong, Raymond W., 4,476,210, Cl. 430-114.000.

Hakugen Co., Ltd.: *See*—
Takeuchi, Keinosuke, 4,476,171, Cl. 428-38.000.

Halcon SD Group, Inc., The: *See*—
Khoobiar, Sargis, 4,476,325, Cl. 568-479.000.
Palmer, Burton J.; and Posluszny, Joseph V., 4,476,238, Cl. 502-31.000.
Porcelli, Richard V., 4,476,237, Cl. 502-31.000.

Hale, Alan A., to General Electric Company. Inserts for cutting tools. 4,475,851, Cl. 407-113.000.

Hall, James E.; and Schulz, Donald N., to Firestone Tire & Rubber Company, The. Catalyst system containing an anionic initiator based on lithium and phosphine oxide modifier. 4,476,240, Cl. 502-155.000.

Hall, John B.; Sanders, James M.; and Siano, James N., to International Flavors & Fragrances Inc. Flavoring of alliaceous-flavored foodstuffs. 4,476,147, Cl. 426-534.000.

Hallam, William R. Home demand controller. 4,476,398, Cl. 307-39.000.

Halpine, Joseph C., to Measurement R & D Corporation. Double wall meter prover. 4,475,377, Cl. 73-3.000.

Ham, Nancy M.; and Miyazaki, Teruko, to Ciba-Geigy Corporation. Castable polyurethane systems. 4,476,292, Cl. 528-60.000.

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Hamermesh, Charles L., to Rockwell International Corporation. Friction material for brake linings and the like. 4,476,256, Cl. 523-152.000.

Hanabusa, Kanehisa: *See*—
Miyoshi, Shigeto; Hanabusa, Kanehisa; and Kagami, Toshio, 4,476,035, Cl. 252-62.540.

Hanawa, Masatoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Radiation detector having radiation source position detecting means. 4,476,390, Cl. 250-385.000.

Hancock, William L., to Hoover Universal, Inc. Wire spring assembly for sofa sleeper mattresses. 4,475,724, Cl. 267-103.000.

Hand, Calvin H., Jr.; Hand, David J.; and Careatti, John A., to Hand, Calvin H., Jr.; Hand, David J.; Mulqueen, Herbert, Jr.; and Abrams, Stan. Bio-mass burner with grate therefor and method of operation. 4,475,471, Cl. 110-345.000.

Hand, David J.: *See*—
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Haney, Keith M., to Walker-Neer Manufacturing Co. Inc. Clamp and insert for clamping drilling tubulars. 4,475,607, Cl. 175-422.000.

Hanna, Marie R.: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,476,042, Cl. 252-522.00R.

Hansen, Paul E.; and Nelson, Robert L., to Minnesota Mining and Manufacturing Company. Dry culture media. 4,476,226, Cl. 435-299.000.

Hanson, Gary N. Interlocking building blocks and system using the same. 4,475,326, Cl. 52-286.000.

Hara, Hikoyoshi; Imai, Hirozo; and Iguchi, Youji, to Matsushita Electric Works, Ltd. Electric shaver having improved hair disposal system. 4,475,285, Cl. 30-41.600.

Hara, Kazuo: *See*—
Suzuki, Hitoshi; and Hara, Kazuo, 4,475,512, Cl. 123-440.000.

Hara, Kuniyoshi: *See*—
Jo, Toshitaka; Hara, Kuniyoshi; Mizuta, Koichi; and Yamamoto, Hiroshi, 4,476,400, Cl. 307-147.000.

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Harden, Eldon A.; and McSweeney, Michael A., to International Harvester Co. Variable width plow system with shim means adjustment. 4,475,601, Cl. 172-283.000.

Hardie-Muncy, Darlene A.; Coker, Guy C.; and Wauters, Ronald P., to General Foods Corporation. Method for agglomerating moisture sensitive materials. 4,476,145, Cl. 426-285.000.

Hardy, Marie C.: *See*—
Aygion, Daniel; and Hardy, Marie C., 4,475,941, Cl. 71-67.000.

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Anderson, Ronald L.; and Harms, John R., 4,475,332, Cl. 60-329.000.

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Harris Corporation: *See*—
Patel, Vipin N., 4,475,955, Cl. 148-1.500.

Harris Graphics Corporation: *See*—
Punater, Dineshchandra G.; and Herman, John L., 4,475,425, Cl. 83-700.000.

Harris, Hubert, to Peanut Research & Testing Labs, Inc. Method of producing a slurry from crop products. 4,476,148, Cl. 426-629.000.

Harris, Robert S., to Stant Inc. Radiator cap probe. 4,475,389, Cl. 73-304.00R.

Harris, Robert S., to Stant Inc. Heater and water probe. 4,476,028, Cl. 210-774.000.

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Chiang, Robert L.; and Scherzer, Julius, 4,476,239, Cl. 502-68.000.

Hartmann, Eduard, to Bucher-Guyer AG. Mechanism for releasably securing a drainage element to a press. 4,475,451, Cl. 100-107.000.

Harwood, Jon W.: *See*—
Gerber, James E.; Harwood, Jon W.; and Hay, Clinton R., 4,475,623, Cl. 181-243.000.

Hascher-Reichl, Asta; Kubach, Hans; and Gross, Werner, to Robert Bosch GmbH. Magnetic valve, in particular a fuel injection valve. 4,475,690, Cl. 239-585.000.

Hase, Yoshifumi: *See*—
Nakajima, Yasuo; Nagumo, Shinichi; Hase, Yoshifumi; and Gotoh, Takaharu, 4,475,739, Cl. 277-216.000.

Hasegawa, Kazutaka: *See*—
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, 4,475,388, Cl. 73-204.000.

Hasegawa, Shumpei; Koumura, Takashi; Mieno, Toshiyuki; and Oikawa, Kiyoshi, to Honda Motor Co., Ltd. System for controlling idling rpm by synchronous control of supplementary air. 4,475,505, Cl. 123-339.000.

Hashimoto, Kazuo: *See*—
Tamori, Michitoshi, deceased; Kobayashi, Hideo; Hashimoto, Kazuo; and Kawai, Kazuo, 4,476,539, Cl. 364-825.000.

Hashimoto, Kenichiro, to Canon Kabushiki Kaisha. Non-impact printing apparatus. 4,475,825, Cl. 400-120.000.

Hashimoto, Masashi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,476,050, Cl. 260-112.50R.

Haskell, Barin G., to AT&T Bell Laboratories. Technique for providing compatibility between high-definition and conventional color television. 4,476,484, Cl. 358-11.000.

Hassler, Yngve: *See*—
Berggren, Benny; and Hassler, Yngve, 4,476,363, Cl. 219-10.55A.

Hastings, Otis H., to Transaction Security, Inc. Transaction security system and modular transaction processing center. 4,475,465, Cl. 109-2.000.

Hatala, John, to Temco Home Health Care Products, Inc. Shower transfer bench. 4,475,256, Cl. 4-562.000.

Hatanaka, Koji: *See*—
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Hathaway, Richard A., to Ampex Corporation. Shock absorbing bracket for a fallfront cabinet. 4,475,267, Cl. 16-288.000.

Hatschek, Rudolf; and Bernau, Werner, to Asulab S.A. Method and apparatus for performing blood pressure measurements. 4,475,557, Cl. 128-681.000.

Hatton, Leslie: *See*—
Ziolkowski, Antoni M.; Hatton, Leslie; Parkes, Gregory E.; and Haugland, Tor-Arvid, 4,476,553, Cl. 367-144.000.

Hattori, Tadashi: *See*—
Nishida, Minoru; Hattori, Tadashi; and Yanagisawa, Takanori, 4,476,412, Cl. 313-130.000.

Hatvany, Bela R.: *See*—
Ng, Henry H.; and Hatvany, Bela R., 4,476,463, Cl. 340-712.000.

Haubrich, Lothar: *See*—
Durr, Heinrich; Haubrich, Lothar; Weber, Wendelin; and Richter, Hermann, 4,475,826, Cl. 400-124.000.

Hauger, Harry L.; and Beal, Glenn L., to R. M. Smith, Inc. Variable dilution ratio hose-end sprayer. 4,475,689, Cl. 239-318.000.

Haugland, Tor-Arvid: *See*—
Ziolkowski, Antoni M.; Hatton, Leslie; Parkes, Gregory E.; and Haugland, Tor-Arvid, 4,476,553, Cl. 367-144.000.

Haumann, Wolfgang: *See*—
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Havelund, Svend: *See*—
Brange, Jens J. V.; and Havelund, Svend, 4,476,118, Cl. 424-178.000.

Haviv, Fortuna; Ratajczyk, James D.; and Fischer, Francis E., to Abbott Laboratories. [1-(2-Benzoxazolyl)hydrazino]alkyl nitrile derivatives. 4,476,137, Cl. 424-272.000.

Hawk, Charles E.; and Whitcomb, Jonathan T., to Teledyne Industries, Inc. High temperature mass flowmeter. 4,475,387, Cl. 73-202.000.

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Gerber, James E.; Harwood, Jon W.; and Hay, Clinton R., 4,475,623, Cl. 181-243.000.

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Hayakawa, Masatoshi; Aso, Koichi; Uedaira, Satoru; Ochiai, Yoshitaka; Matsuda, Hideki; Hotai, Kazuhide; and Hayashi, Kazuhiko, to Sony Corporation. Annealing method for amorphous magnetic alloy. 4,475,962, Cl. 148-108.000.

Hayamizu, Toshisada, to Olympus Optical Co., Ltd. Annular illumination device. 4,476,519, Cl. 362-32.000.

Hayase, Shuzi; and Onishi, Yasunobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Photocurable silicon compound composition. 4,476,290, Cl. 528-13.000.

Hayashi, Kazuhiko: *See*—
Hayakawa, Masatoshi; Aso, Koichi; Uedaira, Satoru; Ochiai, Yoshitaka; Matsuda, Hideki; Hotai, Kazuhide; and Hayashi, Kazuhiko, 4,475,962, Cl. 148-108.000.

Hayashida, Takanori, to Yamaha Hatsudoki Kabushiki Kaisha. Induction system of four stroke internal combustion engine. 4,475,509, Cl. 123-432.000.

Hayatdavoudi, Asadollah, to Petroleum Instrumentation & Technological Services. Separator sub. 4,475,603, Cl. 175-65.000.

Healthdyne, Inc.: *See*—
Brock, R. Wade, 4,475,558, Cl. 128-710.000.

Heard, Robert A. H., to Signfix Limited. Tape dispensing pack. 4,475,652, Cl. 206-409.000.

Hecht, Georg: *See*—
Baackmann, Dirk; Hecht, Georg; Schlagenhaft, Johann; and Schnell, Karl, 4,476,561, Cl. 371-25.000.

Hegarty, William P.; and Schmidt, William P., to Air Products and Chemicals, Inc. Process for separating carbon dioxide and sulfur-containing gases from a synthetic fuel production process off-gas. 4,475,347, Cl. 62-17.000.

Heidelbach, Gerhard. Retainer element for a dental prosthesis. 4,475,890, Cl. 433-173.000.

Heidsiek, Horst; and Jackel, Gernot, to Degussa Aktiengeselischaft. Material for jewelry and commodities and process for its production. 4,476,090, Cl. 419-19.000.

Heilman, Marlin S.: *See*—
Langer, Alois A.; and Heilman, Marlin S., 4,475,551, Cl. 128-419.00D.

Heilskov, Jens A. Landing net. 4,475,628, Cl. 182-198.000.

Heinzel, Irving C.: *See*—
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Heise Manufacturing Co., Inc.: *See*—
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Forth, Hans-Joachim; and Heisig, Rolf, 4,475,345, Cl. 62-6.000.

Heiskell, Ronald E.; Kirkpatrick, Gregg R.; Newman, Garry F.; and Stewart, James D. Piano lift. 4,475,714, Cl. 254-89.00H.

Heiss, Dieter: *See*—
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Helix Technology Corporation: *See*—
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Henderson, Robert: *See*—
Young, Neils O.; Henderson, Robert; and Kerney, Peter J., 4,475,346, Cl. 62-6.000.

Hendrickson, Richard T., to Bendix Corporation, The. Brake apparatus. 4,475,444, Cl. 91-519.000.

Henkel Corporation: *See*—
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Kittscher, Peter; Schumann, Klaus; Altenschopfer, Theodor; Haumann, Wolfgang; and Smolka, Heinz G., 4,475,663, Cl. 220-87.000.
Ploog, Uwe; Wegener, Ingo; Glasl, Johann; Erwied, Werner; Bartnick, Bernhard; and Hofer, Rainer, 4,476,037, Cl. 252-354.000.
Wilk, Hans-Christoph; and Geke, Jurgen, 4,476,269, Cl. 524-297.000.

Henneberg, Helmut H.; and Dillion, Richard R., to Honeywell Information Systems Inc. Document holder for display terminal. 4,475,705, Cl. 248-447.200.

Hennequin, Petrus J., to Hunter Douglas International N.V. Mechanism for a roller blind. 4,475,580, Cl. 160-308.000.

Henricks, Charles G. Process for drying and curing wire insulation using heat exchange and apparatus therefor. 4,475,294, Cl. 34-79.000.

Henriksson, Goran; and Lindahl, Sune. Electrohydraulic set device. 4,475,441, Cl. 91-387.000.
Hensens, Otto D.: *See*—
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Hensley, Albert L., Jr.: *See*—
Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., 4,476,011, Cl. 208-111.000.
Herberts Gesellschaft mit beschraenkter Haftung: *See*—
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Herceg, Joseph E., to United States of America, Energy. Integral manifolding structure for fuel cell core having parallel gas flow. 4,476,197, Cl. 429-32.000.
Hercules Incorporated: *See*—
Schroeder, Richard B., 4,475,810, Cl. 355-85.000.
Hergeth Hollingsworth GmbH: *See*—
Hergeth, Hubert A., 4,475,270, Cl. 19-81.000.
Hergeth, Hubert A., to Hergeth Hollingsworth GmbH. Control device for opening fiber bales. 4,475,270, Cl. 19-81.000.
Herlihy, Walter C.; and Epstein, David M., to Repligen Corporation. N-Oxide of the O-β-D glucuronides of anticholinergic compounds, and process for preparing the same. 4,476,300, Cl. 536-17.400.
Herman, John L.: *See*—
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Hermann Berstorff Maschinenbau GmbH: *See*—
Koch, Klaus; and Syrbius, Gerhard, 4,475,452, Cl. 100-117.000.
Hermanson, William C.: *See*—
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Tarjan, Peter P.; and Hess, Stanley R., 4,475,560, Cl. 128-785.000.
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Hidaka, Kunihiko: *See*—
Iwata, Kazuroh; Fukuhsima, Naoto; and Hidaka, Kunihiko, 4,475,635, Cl. 188-282.000.
Higashi, Yuichiro: *See*—
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Yamaguchi, Keiki; Sano, Shinichi; Akimoto, Hiromichi; Higashiizumi, Takao; Yamanaka, Mineo; and Ishihara, Takahiko, 4,475,553, Cl. 128-660.000.
Highton, Frederick J.: *See*—
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Higuchi, Megumu, to Nissan Motor Company, Limited. Variable ratio rack and pinion steering gear. 4,475,413, Cl. 74-422.000.
Hildebrandt, Eugene F.; and Ottersbach, Thomas V., to Emerson Electric Co. Apparatus and system for terminating the winding wires of a dynamoelectric machine. 4,476,407, Cl. 310-71.000.
Hiles, Maurice A. F., to National Research Development Corporation. Energy absorbing polyurethane compositions. 4,476,258, Cl. 523-212.000.
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Horrall, Thomas R.; and Hirtle, Parker W., 4,476,572, Cl. 381-73.000.
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Fujiwara, Yukinari, 4,476,437, Cl. 330-138.000.
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Toyoda, Motoya; Ainoya, Masayuki; Kozawa, Hiroomi; and Katagiri, Shigenobu, 4,475,807, Cl. 355-15.000.
Hitachi, Ltd.: *See*—
Fujisawa, Hiromichi; Endo, Hirohide; and Komatsu, Hitoshi, 4,476,495, Cl. 358-262.000.
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Mitani, Eisuke; Okamoto, Yukio; and Sumioka, Atsushi, 4,476,466, Cl. 340-805.000.
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Sato, Eiji, 4,475,874, Cl. 418-55.000.
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Taya, Shunroku; and Fujiwara, Mituo, 4,476,393, Cl. 250-492.200.
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Hitachi Shipbuilding & Engineering Co., Ltd.: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
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Ito, Tatsuo; Hoda, Kazuyuki; and Mizuno, Masataka, 4,476,579, Cl. 455-147.000.
Hodges, James L. Artificial snow making. 4,475,688, Cl. 239-2.00S.
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Idstein, Hermann; Silbereisen, Dieter; and Reininger, Hermann, 4,475,979, Cl. 156-542.000.
Kablitz, Hans-Jurgen; and Strametz, Helmut, 4,476,297, Cl. 528-486.000.
May, Adolf; Bucking, Hans-Walter; and Schreiber, Manfred, 4,476,030, Cl. 252-8.800.
Mees, Bernhard; and Lorke, Horst, 4,476,034, Cl. 252-49.500.
Millauer, Hans; and Schwertfeger, Werner, 4,476,058, Cl. 260-458.00F.
Wiezer, Hartmut; and Pfahler, Gerhard, 4,476,302, Cl. 544-198.000.
Hoeffken, Russell W., to Snyder General Corporation. Air conditioning and heat pump cabinets with removable coil guards. 4,475,585, Cl. 165-134.00R.

Hofer, Peter: *See*—
Shetty, Bola V.; McFadden, Arthur; and Hofer, Peter, 4,476,311, Cl. 548-531.000.

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Ploog, Uwe; Wegener, Ingo; Glasl, Johann; Erwied, Werner; Bartnick, Bernhard; and Hofer, Rainer, 4,476,037, Cl. 252-354.000.

Hoffmann-La Roche Inc.: *See*—
Aschwanden, Werner; and Kyburz, Emilio, 4,476,308, Cl. 546-208.000.
Kung, Hsiang-Fu, 4,476,049, Cl. 260-112.00R.
Pawson, Beverly A., 4,476,056, Cl. 260-404.000.

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Holst, Wolfgang, to Auergesellschaft GmbH. Circuit arrangement for an apparatus for measuring and indicating the concentration of combustible gases and vapors contained in air. 4,476,096, Cl. 422-96.000.

Holcombe, Thomas C.: *See*—
Gray, Robert L., Jr.; and Holcombe, Thomas C., 4,476,345, Cl. 585-820.000.

Holecek, Joseph J., to International Business Machines Corporation. Transducer head positioning adapter for fixed head flexible disk drives. 4,475,281, Cl. 29-603.000.

Hollandsche Beton Groep N.V.: *See*—
Nette, Aart; and Kruyt, Jacob A., 4,475,846, Cl. 405-17.000.

Hollweck, Walter, to Thermostat- und Schaltgeratebau GmbH & Co. Temperature responsive switch. 4,476,453, Cl. 337-361.000.

Holmes, Maurice F.: *See*—
Clausing, Don P.; Holmes, Maurice F.; Povio, Raymond A.; and Rebres, Robert P., 4,475,732, Cl. 271-10.000.

Holmes, Paul M.: *See*—
Crissy, Charles F.; and Holmes, Paul M., 4,475,855, Cl. 410-126.000.

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Holtrop, James S.; and Maurer, Richard P., to Monsanto Company. Thermoformable laminate structure with improved acoustical absorption. 4,476,183, Cl. 428-286.000.

Holzner, Gunter. Partially flexible injection syringe device with pressure release valve or special breakable seal. 4,475,906, Cl. 604-212.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Anno, Nobuo; Okui, Haruki; Yamamoto, Kuniyuki; and Miyazaki, Kunio, 4,475,893, Cl. 474-13.000.
Asaka, Urataro; Miyazawa, Shinkichi; Nakano, Teruyuki; and Masuda, Shoji, 4,475,510, Cl. 123-432.000.
Honda, Shoichi, 4,475,489, Cl. 123-90.160.
Honda, Shoichi; Matsuura, Masaaki; and Anno, Nobuo, 4,475,497, Cl. 123-198.00F.
Inoue, Kazuo; and Kato, Kentaro, 4,475,341, Cl. 60-605.000.
Tsunoda, Kazuhiko; Tsurumi, Yasuyuki; and Komori, Masamichi, 4,475,622, Cl. 181-227.000.
Yamazaki, Sho; Matsumoto, Kazutoshi; and Ochiai, Hideo, 4,475,616, Cl. 180-215.000.

Honda, Kenji: *See*—
Frank, Arthur J.; and Honda, Kenji, 4,476,003, Cl. 204-290.00R.

Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei; Koumura, Takashi; Mieno, Toshiyuki; and Oikawa, Kiyoshi, 4,475,505, Cl. 123-339.000.

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Honda, Tadatoshi; Matsuda, Fujio; Kiyoura, Tadamitsu; and Terada, Kazuhiro, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of indoles. 4,476,310, Cl. 548-508.000.

Honeywell Inc.: *See*—
Douglas, Richard B.; Fure, Barbara J.; and Lai, Jucy H., 4,476,217, Cl. 430-326.000.
Mykkanen, C. Fred, 4,476,514, Cl. 361-213.000.
Rountry, Robert A., 4,475,711, Cl. 251-85.000.

Honeywell Information Systems Inc.: *See*—
Henneberg, Helmut H.; and Dillion, Richard R., 4,475,705, Cl. 248-447.200.
Quinones, Matthew M.; Mirow, Fred A.; and Troup, Robert M., 4,476,543, Cl. 364-900.000.

Honkawa, Yoshinori: *See*—
Ishii, Koji; Shinmoto, Takahiko; Maehara, Kenso; and Honkawa, Yoshinori, 4,475,456, Cl. 101-144.000.

Honsinger, Vernon B., to General Electric Company. High efficiency, low cost permanent magnet AC machine. 4,476,408, Cl. 310-156.000.

Hoover, John W., to Dictaphone Corporation. Tape cassette. 4,476,510, Cl. 360-132.000.

Hoover, Lonnie D.: *See*—
House, Roy F.; and Hoover, Lonnie D., 4,476,032, Cl. 252-8.55R.

Hoover Universal, Inc.: *See*—
Hancock, William L., 4,475,724, Cl. 267-103.000.

Hopkins, Patricia A. Wearable purse. 4,475,251, Cl. 2-94.000.

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Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.

Horie, Seiji; Nakano, Junji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Compounds having barbituric acid or thiobarbituric acid residue, photoconductive compositions and electrophotographic light sensitive materials containing the compounds as charge generating materials. 4,476,208, Cl. 430-58.000.

Horikoshi, Katsunori; and Abe, Tsutomu, to Asahi Kasei Kogyo Kabushiki Kaisha. Granulocyte-separating material and granulocyte separator. 4,476,023, Cl. 210-446.000.

Hormadaly, Jacob, to Du Pont de Nemours, E. I., and Company. Stain-resistant ruthenium oxide-based resistors. 4,476,039, Cl. 252-518.000.

Horn, Mary. Apparatus and method for detecting apnea. 4,475,559, Cl. 128-716.000.

Horrall, Thomas R.; and Hirtle, Parker W., to Bolt Beranek and Newman Inc. Partition system for open plan office spaces. 4,476,572, Cl. 381-73.000.

Hosoe, Kazuya: *See*—
Kinoshita, Takao; and Hosoe, Kazuya, 4,475,800, Cl. 354-406.000.

Hosoi, Noriyuki, to Fuji Photo Film Co., Ltd. Preparation of electrostatographic toner material provided with surface electroconductivity. 4,476,211, Cl. 430-137.000.

Hosokawa, Toshihiro: *See*—
Onaya, Mamoru; Chiba, Hitoshi; and Hosokawa, Toshihiro, 4,475,842, Cl. 403-370.000.

Hotai, Kazuhide: *See*—
Hayakawa, Masatoshi; Aso, Koichi; Uedaira, Satoru; Ochiai, Yoshitaka; Matsuda, Hideki; Hotai, Kazuhide; and Hayashi, Kazuhiko, 4,475,962, Cl. 148-108.000.

House, Roy F.; and Hoover, Lonnie D., to NL Industries, Inc. Method of increasing the rate of hydration of activated hydroethyl cellulose compositions. 4,476,032, Cl. 252-8.55R.

Houston, James M., Jr.; and Baker, John W. Sewer relief valve. 4,475,571, Cl. 137-430.000.

Howard, Harry R., Jr.; and Sarges, Reinhard, to Pfizer Inc. Heteroylidene indolone compounds. 4,476,307, Cl. 546-201.000.

Howard, Ronald A.; Sarangapani, Srinivasan; and Edwards, Lawrence G., to Union Carbide Corporation. Metal current carrier for electrochemical cell electrodes. 4,476,002, Cl. 204-283.000.

Howard, Thomas L. Signal staff for a person in the water. 4,475,476, Cl. 116-210.000.

Hsieh, C. Richard, to Chevron Research Company. Gasification process for carbonaceous materials. 4,475,925, Cl. 48-197.00R.

Huang, Fu-Chih: *See*—
Loev, Bernard; and Huang, Fu-Chih, 4,476,125, Cl. 424-246.000.

Huang, Ray C.: *See*—
Orlandea, Nicolae V.; Huang, Ray C.; Romig, Bernard E.; and Wiley, Jack C., 4,475,775, Cl. 305-28.000.

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Huchzermeier, Roy F.; and Spring, Thomas G., to Abbott Laboratories. Determination of unsaturated thyroxine binding protein sites using fluorescence polarization techniques. 4,476,228, Cl. 436-500.000.

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Hughes Aircraft Company: *See*—
Prince, Paul R., 4,476,568, Cl. 377-60.000.

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Rhemer, Chris C.; Hughes, Scott E.; and Gostic, William J., 4,475,980, Cl. 156-603.000.

Hull, Robert; and Lane, Joseph A., to Amtrol Inc. Gas-liquid vortex separator-eliminator. 4,475,932, Cl. 55-170.000.

Hunger, Klaus; Ribka, Joachim; Weingarten, Friedrich; and Rieper, Wolfgang, to Farbwerke Hoechst Aktiengesellschaft. Azo pigment having improved hiding power and a process for its preparation. 4,476,052, Cl. 260-157.000.

Hunt-Wesson Foods, Inc.: *See*—
Beckstrom, Ronald D.; and Anderson, Chester C., 4,475,274, Cl. 29-450.000.

Hunter Douglas Inc.: *See*—
Anderson, Richard N., 4,475,706, Cl. 248-542.000.

Hunter Douglas International N.V.: *See*—
Hennequin, Petrus J., 4,475,580, Cl. 160-308.000.

Huppi, Glenn S.: *See*—
Wright, Wade S.; Voisine, John T.; and Huppi, Glenn S., 4,476,430, Cl. 324-61.00R.

Hurner, Erwin E. Engine detecting device. 4,475,498, Cl. 123-198.0DB.

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Barda, Henry J.; and Hussain, Saadat, 4,476,267, Cl. 524-265.000.
Barda, Henry J.; and Hussain, Saadat, 4,476,268, Cl. 524-265.000.

Husamann, Peter, to Mittex Aktiengesellschaft. Installation for the dehumidification of a gaseous drying medium using an adsorbent and with regeneration of the adsorbent. 4,475,295, Cl. 34-80.000.

Hutchinson, Mark R.; and Parker, David A. Automobile cover. 4,475,764, Cl. 296-136.000.

Huther, Werner, to MTU Motoren-und Turbinen-Union Munchen GmbH. Valve for an internal combustion engine. 4,475,494, Cl. 123-188.00A.

Hyndman, Barry W., to Nederladse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek. Noninvasive continuous blood pressure meter. 4,475,554, Cl. 128-664.000.

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Baker, Martin L.; and Iacovazzi, Robert A., 4,475,794, Cl. 350-288.000.

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Glaser, Jerry; Sirridge, Henry A.; and Ibach, Ernest J., 4,475,824, Cl. 384-306.000.
Idstein, Hermann; Silbereisen, Dieter; and Reininger, Hermann, to Hoechst Aktiengesellschaft. Method and apparatus for transferring a toner image from moving photoconductor. 4,475,979, Cl. 156-542.000.
IEM Ltd.: *See—*
Gerhart, Roland T., 4,475,531, Cl. 126-121.000.
Iesaka, Susumu; and Yakushizi, Shigenori, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a glass passivation semiconductor device. 4,476,154, Cl. 427-53.100.
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Kano, Masafumi; Takahashi, Teruyuki; and Igarashi, Hiroshi, 4,476,271, Cl. 524-377.000.
Igawa, Haruo: *See—*
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Iguchi, Youji: *See—*
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Ihara Chemical Industry Co., Ltd.: *See—*
Harada, Takao; and Yazawa, Chihiro, 4,476,318, Cl. 560-50.000.
Iizuka, Takao: *See—*
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Ono, Yoshihiro; Nabara, Akira; and Ikeda, Tomoaki, 4,476,195, Cl. 428-695.000.
Ikenberry, Maynard D. Hydraulic powered pipe and tubing straightener. 4,475,373, Cl. 72-392.000.
Image Communications Inc.: *See—*
Thaler, Michael R., 4,476,496, Cl. 358-286.000.
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Imai, Takeshi; Kako, Naohiro; Asano, Nobuyuki; Masuda, Shigeo; and Katsuda, Morihiko, to Sumitomo Electric Industries, Ltd. Enameled wires having resistance to overload and process for producing the same. 4,476,192, Cl. 428-391.000.
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O'Hara, Mark J.; and Imai, Tamotsu, 4,476,342, Cl. 585-514.000.
Imbach, Jean-Louis; and Gosselin, Gilles J. M., to Centre National de la Recherche Scientifique. Oligonucleotides, a process for preparing the same and their application as mediators of the action of interferon. 4,476,301, Cl. 536-27.000.
Imperial Chemical Industries Limited: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,476,296, Cl. 528-481.000.
Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., 4,476,181, Cl. 428-220.000.
Imperial Chemical Industries PLC: *See—*
Coffee, Ronald A., 4,476,515, Cl. 361-226.000.
Morley, John S., 4,476,117, Cl. 424-177.000.
Imura, Ryo; Ikeda, Tadashi; Ohta, Norio; Takeuchi, Teruaki; and Sugita, Yutaka, to Hitachi, Ltd. Method for production of magnetic bubble memory device. 4,476,152, Cl. 427-38.000.
Inaguma, Yoshiharu: *See—*
Nakamura, Keiichi; Mori, Yutaka; and Inaguma, Yoshiharu, 4,476,529, Cl. 364-424.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
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Ingle, Lloyd D., to Micromanipulator Co., Inc., The. Bonder apparatus. 4,475,681, Cl. 228-4.500.
Inoguchi, Kazuhiro; Asano, Mitsuru; Okamoto, Kunio; and Nakanishi, Tomohiko, to Nippon Soken, Inc. Method for producing a cordierite body. 4,476,236, Cl. 501-118.000.
Inouchi, Toshitsugu: *See—*
Kimura, Tokusuke; Kurosu, Fumio; Inouchi, Toshitsugu; and Komatsu, Masana, 4,476,109, Cl. 424-85.000.
Inoue, Hidefumi, to Jidosha Kiki Co., Ltd. Apparatus for controlling braking liquid pressure. 4,475,339, Cl. 60-591.000.
Inoue-Japax Research Incorporated: *See—*
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Inspection Technology, Inc.: *See—*
Weltlich, Gary P.; and Wagner, Gary G., 4,476,489, Cl. 358-107.000.
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Rashev, Tzolo V.; Valkov, Lyudmil K.; Rasheva, Ivanka A.; Stoyanov, Stoyan M.; Kossev, Danail K.; and Lambev, Yordan G., 4,476,565, Cl. 373-50.000.
Intensiv-Filter GmbH & Co. KG: *See—*
Kordas, Friedel, 4,475,934, Cl. 55-302.000.
Interaction Systems, Inc.: *See—*
Ng, Henry H.; and Hatvany, Bela R., 4,476,463, Cl. 340-712.000.
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Kerz, Klaus, 4,476,086, Cl. 376-219.000.
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Voges, Karl-Friedrich, 4,475,907, Cl. 604-322.000.
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Blum, Arnold, 4,476,431, Cl. 324-73.00R.
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Bushaw, Kenneth A.; Rackley, Darwin P.; and Woodward, Milton H., 4,476,522, Cl. 364-200.000.
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Holecek, Joseph J., 4,475,281, Cl. 29-603.000.
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Schaefer, John O'N., 4,475,830, Cl. 400-238.000.
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Hall, John B.; Sanders, James M.; and Siano, James N., 4,476,147, Cl. 426-534.000.
Hill, Ira D.; Trenkle, Robert W.; Mookherjee, Braja D.; and Wolff, Robin K., 4,476,041, Cl. 252-522.00R.
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,476,042, Cl. 252-522.00R.
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Koester, Harold E.; and Davids, Robert E., 4,475,564, Cl. 133-8.00R.
International Harvester Co.: *See—*
Harden, Eldon A.; and McSweeney, Michael A., 4,475,601, Cl. 172-283.000.
International Paper Co.: *See—*
Cael, John J., 4,475,984, Cl. 162-76.000.
International Power Technology, Inc.: *See—*
Cheng, Dah Y., 4,476,024, Cl. 210-500.200.
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Deindoerfer, Fred H.; and Gangwer, James R., 4,476,231, Cl. 436-534.000.
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Chang, Hyokang; Shenoi, Kishan; and Agrawal, Bgahwati P., 4,476,435, Cl. 329-50.000.
Reed, Joseph, 4,476,585, Cl. 455-207.000.
Intex Inc.: *See—*
White, Roy H., 4,476,382, Cl. 235-491.000.
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Bindhoff, Eduardo W., 4,476,074, Cl. 264-35.000.
Inui, Toshiharu: *See—*
Moriguchi, Haruhiko; Inui, Toshiharu; and Ohmori, Takashi, 4,476,179, Cl. 428-216.000.
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Amara, Louis J.; Paoletti, Peitro; and Tavana, Benito J., 4,475,952, Cl. 106-94.000.
Ioanesian, Jury R.; and Popko, Valery V., to Vsesojuzny Nauchnoissledovatelsky Institut Burovoi Tekhniki. Turbodrill. 4,475,605, Cl. 175-107.000.
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Ireland, Jack W. Method for coating lenses. 4,476,162, Cl. 427-164.000.
Isaka, Takenobu; and Kobayashi Masaaki, to Matsushita Electric Industrial Co., Ltd. Tracking apparatus. 4,476,500, Cl. 360-10.300.
Ishiba, Teruyuki: *See—*
Hirai, Kentaro; Matsutani, Shigeru; Makino, Itsuo; and Ishiba, Teruyuki, 4,476,133, Cl. 424-269.000.
Ishida, Hiroshi: *See—*
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Ishida, Koji, to Pioneer Electronic Corporation. IF Signal processing circuit in a receiver. 4,476,586, Cl. 455-207.000.
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Ishiguro, Kazutoyo: *See—*
Kanamaru, Hitoshi; Amaya, Toshiyuki; Ishiguro, Kazutoyo; and Masaki, Keiji, 4,476,499, Cl. 358-342.000.
Ishihara, Masatomo: *See—*
Komoda, Hirohisa; and Ishihara, Masatomo, 4,476,080, Cl. 264-176.00R.
Ishihara, Takahiko: *See—*
Yamaguchi, Keiki; Sano, Shinichi; Akimoto, Hiromichi; Higashiizumi, Takao; Yamanaka, Mineo; and Ishihara, Takahiko, 4,475,553, Cl. 128-660.000.

Ishii, Hideshi, to NEC Corporation. Pipeline-controlled data processing system capable of performing a plurality of instructions simultaneously. 4,476,525, Cl. 364-200.000.
Ishii Hyoki Co., Ltd.: *See*—
Ishii, Mineo; Arimoto, Kasei; and Nakano, Teruyuki, 4,475,259, Cl. 15-102.000.
Ishii, Koji; Shinmoto, Takahiko; Machara, Kenso; and Honkawa, Yoshinori, to Ryobi Ltd. Offset perfecting press. 4,475,456, Cl. 101-144.000.
Ishii, Mineo; Arimoto, Kasei; and Nakano, Teruyuki, to Ishii Hyoki Co., Ltd. Ultrasonic cleaning apparatus. 4,475,259, Cl. 15-102.000.
Ishii, Satoshi, to Pioneer Electronic Corporation. Power amplifier circuit. 4,476,444, Cl. 330-297.000.
Ishikawa, Hideo: *See*—
Machara, Nobunori; Utada, Norihumi; Oda, Taiji; Ashitaka, Hidetomo; and Ishikawa, Hideo, 4,476,287, Cl. 526-92.000.
Ishikawa, Tokihiko; and Motomura, Takehiko, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Incinerator with moving-bed stoker. 4,475,468, Cl. 110-257.000.
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Ishikawa, Tokihiko; and Motomura, Takehiko, 4,475,468, Cl. 110-257.000.
Ishino, Teiichi; Ueda, Ikuo; and Kai, Rikiya, to Asahi Kasei Kogyo Kabushiki Kaisha. Magnetic coating composition of partially oxidized nitrocellulose and magnetic powder. 4,476,257, Cl. 523-181.000.
Isomura, Shigenori: *See*—
Kato, Katsushi; Isomura, Shigenori; Kobayashi, Akio; and Kondo, Toshio, 4,475,501, Cl. 123-325.000.
Ito, Hiroki: *See*—
Fukatsu, Yoshiaki; Kurahashi, Takashi; Matsui, Kazuma; and Ito, Hiroki, 4,476,419, Cl. 318-444.000.
Ito, Kenzo: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,476,532, Cl. 364-431.050.
Ito, Takayoshi: *See*—
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, 4,475,388, Cl. 73-204.000.
Ito, Tatsuo; Hoda, Kazuyuki; and Mizuno, Masataka, to Fujitsu Ten Limited. Electronic tuning radio receiver. 4,476,579, Cl. 455-147.000.
Itoh, Hiroshi: *See*—
Kobayashi, Nobuyuki; Itoh, Hiroshi; and Sugiura, Yoichi, 4,475,517, Cl. 123-489.000.
Itokawa, Hideji, to Tobishi Pharmaceutical Co., Ltd. Cyclic polyamino containing compounds having therapeutic effect and the preparation thereof. 4,476,299, Cl. 536-174.000.
ITT Industries, Inc.: *See*—
Gahle, Hans-Juergen, 4,475,279, Cl. 29-577.00C.
Iwabuchi, Kazuo: *See*—
Tanaka, Chihaya; Iwabuchi, Kazuo; Kakii, Toshiaki; and Toda, Yuichi, 4,475,935, Cl. 65-3.410.
Iwai, Kenji: *See*—
Takahashi, Eiji; and Iwai, Kenji, 4,475,963, Cl. 148-128.000.
Iwamatsu, Masayuki, to Nippon Gakki Seizo Kabushiki Kaisha. Amplifier with distortion cancellation. 4,476,442, Cl. 330-265.000.
Iwamoto, Tugunari: *See*—
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,476,478, Cl. 357-41.000.
Iwasaki, Nobuyuki: *See*—
Ogawa, Masashi; Ishigaki, Kunio; Nakamura, Taku; and Iwasaki, Nobuyuki, 4,476,218, Cl. 430-539.000.
Iwasawa, Teruo; and Tojiki, Hitomi, to Olympus Optical Co., Ltd. Power supply device. 4,476,428, Cl. 323-314.000.
Iwata, Kazuroh; Fukushima, Naoto; and Hidaka, Kunihiko, to Nissan Motor Company, Limited. Vortex flow shock absorber with one-way valve. 4,475,635, Cl. 188-282.000.
Iwata, Ryuichi: *See*—
Sato, Ikuro; Tamagawa, Susumu; and Iwata, Ryuichi, 4,476,471, Cl. 343-779.000.
J. I. Case Company: *See*—
Anderson, Ronald L.; and Harms, John R., 4,475,332, Cl. 60-329.000.
J. T. Baker Chemical Company: *See*—
Ward, Irl E., 4,476,172, Cl. 428-38.000.
Jabarin, Saleh A., to Owens-Illinois, Inc. Poly(ethylene terephthalate) articles and method. 4,476,170, Cl. 428-35.000.
Jackel, Gernot: *See*—
Heidsiek, Horst; and Jackel, Gernot, 4,476,090, Cl. 419-19.000.
Jackson, Craig A.; and Leadon, Leon R., to Weyerhaeuser Company. Lifting device. 4,475,630, Cl. 187-9.00R.
Jacobs, Bernardus A. J.: *See*—
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Jacobs, Charles S., Jr.: *See*—
Scott, Robert L.; Nejame, Samuel, Jr.; Jacobs, Charles S., Jr.; and Bell, Charles A., 4,476,095, Cl. 422-75.000.
Jacobsen, Anker J. Method for the recovery of petrol (gasoline) from a mixture of petrol vapor and air, and a system for use in the method. 4,475,928, Cl. 55-20.000.
Jaeger, Ben E. Sampler for viscous materials. 4,475,410, Cl. 73-863.840.
Jaff Investment Company: *See*—
Faunce, Frank R., 4,475,892, Cl. 433-212.000.
Jakeway, Robert W. Spoon lure. 4,475,302, Cl. 43-42.500.
Jakobsen, Jakob S.: *See*—
Huelle, Zbigniew R.; Nielsen, Leif; and Jakobsen, Jakob S., 4,475,686, Cl. 236-68.00C.
James River-Dixie/Northern, Inc.: *See*—
Tao, Thomas M., 4,476,078, Cl. 264-119.000.
Jan, Raymond J., to Wyoming Mineral Corporation. Process for recovering uranium and other base metals. 4,475,772, Cl. 299-5.000.
Jankovsky, Frantisek, to Sulzer Brothers Limited. Catching mechanism for a weaving machine. 4,475,575, Cl. 139-439.000.
Janssen, Daniel J. G.: *See*—
Gerritsen, Frederik H.; and Janssen, Daniel J. G., 4,476,352, Cl. 179-81.00R.
Japan Storage Battery Limited: *See*—
Sakai, Yasuharu; and Matsui, Kazuhiro, 4,475,374, Cl. 72-452.000.
Jardin, Stephen C.; and Christensen, Uffe R., to United States of America, Energy. Stabilizing windings for tilting and shifting modes. 4,476,085, Cl. 376-137.000.
Jarmin, Davis R.; and Hinson, Virgil H. Height adjustable tower mounted pull assembly. 4,475,716, Cl. 254-228.000.
Jensen, Niels D.; and Nielsen, Kurt F., to Grundfos A/S. Wet-motor pump. 4,475,873, Cl. 417-422.000.
Jerrold Electronics Corporation: *See*—
Dages, Charles L., 4,476,584, Cl. 455-182.000.
Jeske, Gustav: *See*—
Dietzsch, Kurt; Oess, Hans-Dieter; Kniele, Wolfgang; Zander, Joachim; and Jeske, Gustav, 4,475,445, Cl. 98-2.050.
Jidosha Kiki Co., Ltd.: *See*—
Inoue, Hidefumi, 4,475,339, Cl. 60-591.000.
Takizawa, Tozo; and Hatanaka, Koji, 4,476,378, Cl. 219-270.000.
Jimerson, Bruce D. Capacitor ballast. 4,476,414, Cl. 315-240.000.
Jin, Sungho, to AT&T Bell Laboratories. High remanence iron-manganese alloys for magnetically actuated devices. 4,475,961, Cl. 148-31.550.
Jinotti, Walter. Pollen counter. 4,475,379, Cl. 73-28.000.
Jo, Toshitaka; Hara, Kuniyoshi; Mizuta, Koichi; and Yamamoto, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Terminal apparatus and a batch inserting type test plug for a drawer type relay. 4,476,400, Cl. 307-147.000.
Johns Hopkins University, The: *See*—
Avery, William H., 4,476,249, Cl. 518-703.000.
Johnson, Edwin A.; and Leung, Chun K., to Bendix Corporation, The. Fuel distribution control system for an internal combustion engine. 4,475,511, Cl. 123-436.000.
Johnson, Lennart B., to Teradyne, Inc. Contact pin assembly tool. 4,475,284, Cl. 29-739.000.
Johnson, Michael R.: *See*—
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,476,131, Cl. 424-258.000.
Johnson, Roger F., to Boeing Company, The. Electronic protractor. 4,476,567, Cl. 377-24.000.
Johnson Service Company: *See*—
Kautz, Thomas O.; and Duenkel, Gerald A., 4,476,415, Cl. 318-135.000.
Johnson, Thomas H., to Shell Oil Company. Arene alkylation with akyl halides using metal oxide-tantalum halide/oxide catalysts. 4,476,340, Cl. 585-462.000.
Johnson, Thomas H., to Shell Oil Company. Olefin oligomerization with tantalum halide/oxide-metal oxide catalysts. 4,476,343, Cl. 585-530.000.
Johnston, Byron E.; and Napier, Roger P., to Mobil Oil Corporation. Phosphorus acid catalyst for preparation of 3,9-dichloro-2,4,8,10-tetraoxa-3,9-diphospha spiro (5,5) undecane. 4,476,064, Cl. 260-976.000.
Joichi, Yoshiro; and Ohki, Hiroshi, to Sony Corporation. Tracking servo apparatus for an optical information reproducing system. 4,476,555, Cl. 369-44.000.
Jonathan Ehrenreich, Ehrenreich Electronics: *See*—
Smith, Blaine M.; and Taylor, James A., 4,476,554, Cl. 367-197.000.
Jones, Cecil M.; Washburn, Malcolm E.; and Trostel, Louis J., Jr., to Norton Company. Refractory cement. 4,476,234, Cl. 501-89.000.
Jones, Gardner D., Jr., to International Business Machines Corporation. Digital sine wave synthesizing method and apparatus. 4,476,536, Cl. 364-721.000.
Jones, Kermit M., Jr.: *See*—
Asick, John C.; Douty, George H.; Goodman, Joseph R.; Jones, Kermit M., Jr.; Landis, John M.; Snyder, Clair W., Jr.; Woratyla, John A.; and Zell, Dale R., 4,475,781, Cl. 339-17.0LM.
Jonnes, Nelson, to American Polywater Corporation. Method and apparatus for selectively metering and spreading lubricant in a conduit. 4,475,629, Cl. 184-15.100.
Jorkasky, Richard J., II: *See*—
Giddings, Brandford E.; and Jorkasky, Richard J., II, 4,476,275, Cl. 525-462.000.
Josephson, Charles B., to Phillips Petroleum Company. Method and compositions for acidizing and fracturing wells. 4,476,033, Cl. 252-8.55C.
Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., to British Petroleum Company p.l.c., The. Catalytic process for the production of methanol. 4,476,250, Cl. 518-715.000.
Jung, Dick Y.: *See*—
Kuhlmann, Erven J.; Guptill, Richard P.; Jung, Dick Y.; and Zang, Hyung K., 4,476,009, Cl. 208-8.0LE.
Kablitz, Hans-Jurgen; and Strametz, Helmut, to Hoechst Aktiengesellschaft. Process for removing catalyst residues from polyolefins. 4,476,297, Cl. 528-486.000.
Kabushiki Kaisha Aoyama: *See*—
Aoyama, Ryuji, 4,476,168, Cl. 428-4.000.

Kabushiki Kaisha Daikin Seisakusho: *See*—
Takeuchi, Hiroshi; and Nishimura, Yoshio, 4,475,640, Cl. 192-70.170.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Naito, Kazufumi, 4,475,608, Cl. 177-211.000.
Kabushiki Kaisha Kaijirushi Hamono Center: *See*—
Saito, Tatsuya, 4,475,286, Cl. 30-87.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Kawakami, Shigezo; Omura, Hiroshi; and Ogawa, Katsumi, 4,475,668, Cl. 222-52.000.
Takahashi, Eiji; and Iwai, Kenji, 4,475,963, Cl. 148-128.000.
Kabushiki Kaisha Nagoya Boki Seisakusho: *See*—
Tani, Isamu, 4,475,418, Cl. 81-9.50A.
Kaczerginski, Alexandre; and Pargamin, Laurent, to Ceraver. Method of manufacturing an organic insulator. 4,476,081, Cl. 264-262.000.
Kaeriyama, Minoru: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Mizuno, Masami; Yasuda, Yasushi; and Nakata, Akira, 4,476,303, Cl. 544-223.000.
Kagami, Toshio: *See*—
Miyoshi, Shigeto; Hanabusa, Kanehisa; and Kagami, Toshio, 4,476,035, Cl. 252-62.540.
Kahn, David A., to Canadian Patents & Development Limited. Optical fiber power tap. 4,475,789, Cl. 350-96.150.
Kai, Rikiya: *See*—
Ishino, Teiichi; Ueda, Ikuo; and Kai, Rikiya, 4,476,257, Cl. 523-181.000.
Kaiser Aerospace & Electronics Corporation: *See*—
Colditz, Eugene F., 4,475,290, Cl. 33-126.70R.
Kaiser Aluminum & Chemical Corporation: *See*—
Tyler, Gary A., 4,475,886, Cl. 432-118.000.
Kaji, Gozo: *See*—
Oono, Katsuyasu; and Kaji, Gozo, 4,475,490, Cl. 123-90.520.
Kakihara, Moriyuki, to Sumitomo Metal Industries, Ltd. Method and apparatus for shaping beads of welded steel section. 4,476,370, Cl. 219-78.160.
Kakii, Toshiaki: *See*—
Tanaka, Chihaya; Iwabuchi, Kazuo; Kakii, Toshiaki; and Toda, Yuichi, 4,475,935, Cl. 65-3.410.
Kakimi, Fujio, to Fuji Photo Film Co., Ltd. Preparation of electrostatographic toner material. 4,476,212, Cl. 430-137.000.
Kako, Naohiro: *See*—
Imai, Takeshi; Kako, Naohiro; Asano, Nobuyuki; Masuda, Shigeo; and Katsuda, Morihiko, 4,476,192, Cl. 428-391.000.
Kakuda, Minoru: *See*—
Kuriyama, Yasuhisa; Kakuda, Minoru; and Nitoh, Shoichi, 4,476,314, Cl. 549-531.000.
Kalbskopf, Reinhard: *See*—
Baumberger, Otto; and Kalbskopf, Reinhard, 4,476,158, Cl. 427-109.000.
Kalman, Gabor, to Garrett Corporation, The. Variable speed induction motor drive system. 4,476,424, Cl. 318-832.000.
Kalmanash, Michael H., to United Technologies Corporation. Constant current bias color switch for a beam penetration CRT. 4,476,485, Cl. 358-73.000.
Kambe, Mitsuru; and Fukada, Tomihiro, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Liquid metal mechanical pump. 4,475,866, Cl. 415-112.000.
Kamiya, Hideaki: *See*—
Tsumaki, Masahiro; Fujii, Toshihiko; Kamiya, Hideaki; Suzuki, Haruo; and Goto, Yoshihiro, 4,475,462, Cl. 105-149.000.
Kanai, Kazuhiko; and Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Method of making a ceramic capacitor. 4,475,967, Cl. 156-89.000.
Kanamaru, Hitoshi; Amaya, Toshiyuki; Ishiguro, Kazutoyo; and Masaki, Keiji, to Universal Pioneer Corporation. Video disc recording and reproducing system. 4,476,499, Cl. 358-342.000.
Kane, Odile B.; George, Eric; Tromp, Chantal L.; and Goll, Serge, to Centre Regional De Transfusion Sanguine. Protective solution for preserving functional cells. 4,476,221, Cl. 435-2.000.
Kanebo Ltd.: *See*—
Koyama, Hiroaki; and Shimizu, Shigeo, 4,476,277, Cl. 524-509.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Tawada, Yoshihisa; and Tsuge, Kazunori, 4,476,346, Cl. 136-249.000.
Kanehara, Kenji: *See*—
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, 4,475,388, Cl. 73-204.000.
Kaneko, Kenji, to Victor Company of Japan, Ltd. Horizontal scanning frequency multiplying circuit. 4,476,490, Cl. 358-148.000.
Kaneko, Tadashi: *See*—
Moriguchi, Hiroyuki; Shimura, Takeo; Kaneko, Tadashi; Nomori, Hiroyuki; and Nishiwaki, Akira, 4,476,209, Cl. 430-95.000.
Kaneko, Takashi; and Shoji, Masashi, to Nippon Electric Company Ltd. Pulse signal processing circuit having a protection circuit against over-current breakdown. 4,476,427, Cl. 323-234.000.
Kanemoto, Joshiro: *See*—
Takenaka, Shinji; Nishida, Takeshi; and Kanemoto, Joshiro, 4,476,335, Cl. 568-937.000.
Kania, Charles M.: *See*—
Das, Suryya K.; and Kania, Charles M., 4,476,286, Cl. 525-162.000.
Kanno, Tadaaki; and Higashi, Yuichiro, to Ricoh Company, Ltd. Fixing apparatus for copying machine or the like. 4,475,804, Cl. 355-3.0FU.
Kano, Masafumi; Takahashi, Teruyuki; and Igarashi, Hiroshi, to Dai Nippon Toryo Co., Ltd. Aqueous dispersion type thermosetting coating composition. 4,476,271, Cl. 524-377.000.
Kao Corporation: *See*—
Okumura, Takeo; and Muraoka, Tsutomu, 4,475,261, Cl. 15-195.000.
Karasawa, Yoshiharu: *See*—
Tokinaga, Daizo; Kobayashi, Teruaki; Katori, Akiko; and Karasawa, Yoshiharu, 4,476,005, Cl. 204-403.000.
Karl M. Reich Maschinenfabrik GmbH: *See*—
Farian, Gerhard, 4,475,680, Cl. 227-130.000.
Kasai, Yoshiaki: *See*—
Nakamura, Hiroyuki; Kasai, Yoshiaki; and Ohgami, Masaaki, 4,475,503, Cl. 123-339.000.
Kaschig, Jurgen: *See*—
Kvita, Vratislav; and Kaschig, Jurgen, 4,476,305, Cl. 544-296.000.
Kashio, Toshio, to Casio Computer Co., Ltd. Electronic musical instrument. 4,475,431, Cl. 84-1.270.
Kashiwaya, Mineo; Tanabe, Yoshiyuki; Yamada, Kinsaku; and Tsuruta, Hisato, to Hitachi, Ltd. Fuel injection apparatus for internal combustion engines. 4,475,518, Cl. 123-494.000.
Kasser, Jurgen: *See*—
Strauss, Karl-Peter; and Kasser, Jurgen, 4,476,582, Cl. 455-166.000.
Kasuya, Katsuhiko; Mori, Hidetomo; Fujiwara, Mitsuru; and Matsunaga, Tetsuzo, to Hitachi, Ltd. Screw rotor with tooth form produced by thermal deformation and gear backlash. 4,475,878, Cl. 418-201.000.
Katagiri, Shigenobu: *See*—
Toyoda, Motoya; Ainoya, Masayuki; Kozawa, Hiroomi; and Katagiri, Shigenobu, 4,475,807, Cl. 355-15.000.
Kato, Hiroyasu; and Yagi, Kenkichi, to Toray Industries, Inc. Ultrafine fiber entangled sheet and method of producing the same. 4,476,186, Cl. 428-290.000.
Kato, Katsushi; Isomura, Shigenori; Kobayashi, Akio; and Kondo, Toshio, to Nippondenso Co., Ltd. Electronic control type fuel injection system. 4,475,501, Cl. 123-325.000.
Kato, Kentaro: *See*—
Inoue, Kazuo; and Kato, Kentaro, 4,475,341, Cl. 60-605.000.
Kato, Masayuki: *See*—
Tokumo, Akio; and Kato, Masayuki, 4,476,571, Cl. 381-57.000.
Kato, Shigehiro: *See*—
Koike, Hiroyuki; and Kato, Shigehiro, 4,476,507, Cl. 360-104.000.
Katoh, Heizaburou, to Sankyo Manufacturing Company, Ltd. Roll feed apparatus. 4,475,678, Cl. 226-143.000.
Katori, Akiko: *See*—
Tokinaga, Daizo; Kobayashi, Teruaki; Katori, Akiko; and Karasawa, Yoshiharu, 4,476,005, Cl. 204-403.000.
Katou, Takashi; Hayakawa, Masaharu; and Hirosawa, Hidenori, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Device for controlling the operation of a carburetor. 4,476,067, Cl. 261-39.00A.
Katrush, Rady V.: *See*—
Grigorian, Alfred N.; Kovalev, Andrei P.; Lalov, Vitaly V.; Makarov, Nikolai D.; and Katrush, Rady V., 4,476,225, Cl. 435-287.000.
Katsuda, Morihiko: *See*—
Imai, Takeshi; Kako, Naohiro; Asano, Nobuyuki; Masuda, Shigeo; and Katsuda, Morihiko, 4,476,192, Cl. 428-391.000.
Katsuhiro, Takahashi; Keiichi, Watanabe; Hiroyuki, Jinbo; and Naoto, Hoshihara, to Matsushita Electrical Industrial Co., Ltd. Method of forming lead storage batteries. 4,475,990, Cl. 204-2.100.
Katsuma, Makoto; Hiramatsu, Akira; Arakawa, Kazuhiko; and Murakami, Hiroyasu, to Canon Kabushiki Kaisha. Light measuring device for camera. 4,475,803, Cl. 354-481.000.
Katz, Elena; Ogan, Kenneth L.; and Scott, Raymond P. W., to Perkin-Elmer Corporation, The. Apparatus useful in identifying a solute. 4,476,026, Cl. 210-656.000.
Kausch, William L., to Minnesota Mining and Manufacturing Company. Negative-acting photoresist composition. 4,476,215, Cl. 430-281.000.
Kautz, Thomas O.; and Duenkel, Gerald A., to Johnson Service Company. Feedback transducer. 4,476,415, Cl. 318-135.000.
Kawagishi, Itsuo: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
Kawahara, Katsuyuki: *See*—
Sugishita, Kaneo; and Kawahara, Katsuyuki, 4,475,865, Cl. 415-36.000.
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Thermal flowmeter with temperature compensation. 4,475,388, Cl. 73-204.000.
Kawai, Kazuo: *See*—
Tamori, Michitoshi, deceased; Kobayashi, Hideo; Hashimoto, Kazuo; and Kawai, Kazuo, 4,476,539, Cl. 364-825.000.
Kawakami, Hirotarou; Yamakawa, Kazumi; Yasuda, Hiroshi; and Kitaoka, Teruhiko, to Asahi Corporation. Toy vehicle with inertia wheel. 4,475,305, Cl. 446-463.000.
Kawakami, Masafumi, to Sumitomo Rubber Industries, Ltd. Tire deflation warning device. 4,476,455, Cl. 340-58.000.
Kawakami, Shigezo; Omura, Hiroshi; and Ogawa, Katsumi, to Kabushiki Kaisha Kobe Seiko Sho. Metering feeder for liquid. 4,475,668, Cl. 222-52.000.

Ishii, Hideshi, to NEC Corporation. Pipeline-controlled data processing system capable of performing a plurality of instructions simultaneously. 4,476,525, Cl. 364-200.000.
Ishii Hyoki Co., Ltd.: *See*—
Ishii, Mineo; Arimoto, Kasei; and Nakano, Teruyuki, 4,475,259, Cl. 15-102.000.
Ishii, Koji; Shinmoto, Takahiko; Maehara, Kenso; and Honkawa, Yoshinori, to Ryobi Ltd. Offset perfecting press. 4,475,456, Cl. 101-144.000.
Ishii, Mineo; Arimoto, Kasei; and Nakano, Teruyuki, to Ishii Hyoki Co., Ltd. Ultrasonic cleaning apparatus. 4,475,259, Cl. 15-102.000.
Ishii, Satoshi, to Pioneer Electronic Corporation. Power amplifier circuit. 4,476,444, Cl. 330-297.000.
Ishikawa, Hideo: *See*—
Maehara, Nobunori; Utada, Norihumi; Oda, Taiji; Ashitaka, Hidetomo; and Ishikawa, Hideo, 4,476,287, Cl. 526-92.000.
Ishikawa, Tokihiko; and Motomura, Takehiko, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Incinerator with moving-bed stoker. 4,475,468, Cl. 110-257.000.
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Ishikawa, Tokihiko; and Motomura, Takehiko, 4,475,468, Cl. 110-257.000.
Ishino, Teiichi; Ueda, Ikuo; and Kai, Rikiya, to Asahi Kasei Kogyo Kabushiki Kaisha. Magnetic coating composition of partially oxidized nitrocellulose and magnetic powder. 4,476,257, Cl. 523-181.000.
Isomura, Shigenori: *See*—
Kato, Katsushi; Isomura, Shigenori; Kobayashi, Akio; and Kondo, Toshio, 4,475,501, Cl. 123-325.000.
Ito, Hiroki: *See*—
Fukatsu, Yoshiaki; Kurahashi, Takashi; Matsui, Kazuma; and Ito, Hiroki, 4,476,419, Cl. 318-444.000.
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Ito, Tatsuo; Hoda, Kazuyuki; and Mizuno, Masataka, to Fujitsu Ten Limited. Electronic tuning radio receiver. 4,476,579, Cl. 455-147.000.
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Kobayashi, Nobuyuki; Itoh, Hiroshi; and Sugiura, Yoichi, 4,475,517, Cl. 123-489.000.
Itokawa, Hideji, to Tobishi Pharmaceutical Co., Ltd. Cyclic polyamino containing compounds having therapeutic effect and the preparation thereof. 4,476,299, Cl. 536-174.000.
ITT Industries, Inc.: *See*—
Gahle, Hans-Juergen, 4,475,279, Cl. 29-577.00C.
Iwabuchi, Kazuo: *See*—
Tanaka, Chihaya; Iwabuchi, Kazuo; Kakii, Toshiaki; and Toda, Yuichi, 4,475,935, Cl. 65-3.410.
Iwai, Kenji: *See*—
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Iwamatsu, Masayuki, to Nippon Gakki Seizo Kabushiki Kaisha. Amplifier with distortion cancellation. 4,476,442, Cl. 330-265.000.
Iwamoto, Tugunari: *See*—
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,476,478, Cl. 357-41.000.
Iwasaki, Nobuyuki: *See*—
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Iwasawa, Teruo; and Tojiki, Hitomi, to Olympus Optical Co., Ltd. Power supply device. 4,476,428, Cl. 323-314.000.
Iwata, Kazuroh; Fukuhsima, Naoto; and Hidaka, Kunihiko, to Nissan Motor Company, Limited. Vortex flow shock absorber with one-way valve. 4,475,635, Cl. 188-282.000.
Iwata, Ryuichi: *See*—
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Jabarin, Saleh A., to Owens-Illinois, Inc. Poly(ethylene terephthalate) articles and method. 4,476,170, Cl. 428-35.000.
Jackel, Gernot: *See*—
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Jackson, Craig A.; and Leadon, Leon R., to Weyerhaeuser Company. Lifting device. 4,475,630, Cl. 187-9.00R.
Jacobs, Bernardus A. J.: *See*—
Zalm, Pieter; Jacobs, Bernardus A. J.; and De Poorter, Adriaan W., 4,476,214, Cl. 430-270.000.
Jacobs, Charles S., Jr.: *See*—
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Jacobsen, Anker J. Method for the recovery of petrol (gasoline) from a mixture of petrol vapor and air, and a system for use in the method. 4,475,928, Cl. 55-20.000.
Jaeger, Ben E. Sampler for viscous materials. 4,475,410, Cl. 73-863.840.
Jaff Investment Company: *See*—
Faunce, Frank R., 4,475,892, Cl. 433-212.000.
Jakeway, Robert W. Spoon lure. 4,475,302, Cl. 43-42.500.
Jakobsen, Jakob S.: *See*—
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James River-Dixie/Northern, Inc.: *See*—
Tao, Thomas M., 4,476,078, Cl. 264-119.000.
Jan, Raymond J., to Wyoming Mineral Corporation. Process for recovering uranium and other base metals. 4,475,772, Cl. 299-5.000.
Jankovsky, Frantisek, to Sulzer Brothers Limited. Catching mechanism for a weaving machine. 4,475,575, Cl. 139-439.000.
Janssen, Daniel J. G.: *See*—
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Japan Storage Battery Limited: *See*—
Sakai, Yasuharu; and Matsui, Kazuhiro, 4,475,374, Cl. 72-452.000.
Jardin, Stephen C.; and Christensen, Uffe R., to United States of America, Energy. Stabilizing windings for tilting and shifting modes. 4,476,085, Cl. 376-137.000.
Jarmin, Davis R.; and Hinson, Virgil H. Height adjustable tower mounted pull assembly. 4,475,716, Cl. 254-228.000.
Jensen, Niels D.; and Nielsen, Kurt F., to Grundfos A/S. Wet-motor pump. 4,475,873, Cl. 417-422.000.
Jerrold Electronics Corporation: *See*—
Dages, Charles L., 4,476,584, Cl. 455-182.000.
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Dietzsch, Kurt; Oess, Hans-Dieter; Kniele, Wolfgang; Zander, Joachim; and Jeske, Gustav, 4,475,445, Cl. 98-2.050.
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Inoue, Hidefumi, 4,475,339, Cl. 60-591.000.
Takizawa, Tozo; and Hatanaka, Koji, 4,476,378, Cl. 219-270.000.
Jimerson, Bruce D. Capacitor ballast. 4,476,414, Cl. 315-240.000.
Jin, Sungho, to AT&T Bell Laboratories. High remanence iron-manganese alloys for magnetically actuated devices. 4,475,961, Cl. 148-31.550.
Jinotti, Walter. Pollen counter. 4,475,379, Cl. 73-28.000.
Jo, Toshitaka; Hara, Kuniyoshi; Mizuta, Koichi; and Yamamoto, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Terminal apparatus and a batch inserting type test plug for a drawer type relay. 4,476,400, Cl. 307-147.000.
Johns Hopkins University, The: *See*—
Avery, William H., 4,476,249, Cl. 518-703.000.
Johnson, Edwin A.; and Leung, Chun K., to Bendix Corporation, The. Fuel distribution control system for an internal combustion engine. 4,475,511, Cl. 123-436.000.
Johnson, Lennart B., to Teradyne, Inc. Contact pin assembly tool. 4,475,284, Cl. 29-739.000.
Johnson, Michael R.: *See*—
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,476,131, Cl. 424-258.000.
Johnson, Roger F., to Boeing Company, The. Electronic protractor. 4,476,567, Cl. 377-24.000.
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Kautz, Thomas O.; and Duenkel, Gerald A., 4,476,415, Cl. 318-135.000.
Johnson, Thomas H., to Shell Oil Company. Arene alkylation with akyl halides using metal oxide-tantalum halide/oxide catalysts. 4,476,340, Cl. 585-462.000.
Johnson, Thomas H., to Shell Oil Company. Olefin oligomerization with tantalum halide/oxide-metal oxide catalysts. 4,476,343, Cl. 585-530.000.
Johnston, Byron E.; and Napier, Roger P., to Mobil Oil Corporation. Phosphorus acid catalyst for preparation of 3,9-dichloro-2,4,8,10-tetraoxa-3,9-diphospha spiro (5,5) undecane. 4,476,064, Cl. 260-976.000.
Joichi, Yoshiro; and Ohki, Hiroshi, to Sony Corporation. Tracking servo apparatus for an optical information reproducing system. 4,476,555, Cl. 369-44.000.
Jonathan Ehrenreich, Ehrenreich Electronics: *See*—
Smith, Blaine M.; and Taylor, James A., 4,476,554, Cl. 367-197.000.
Jones, Cecil M.; Washburn, Malcolm E.; and Trostel, Louis J., Jr., to Norton Company. Refractory cement. 4,476,234, Cl. 501-89.000.
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Jones, Kermit M., Jr.: *See*—
Asick, John C.; Douty, George H.; Goodman, Joseph R.; Jones, Kermit M., Jr.; Landis, John M.; Snyder, Clair W., Jr.; Woratyla, John A.; and Zell, Dale R., 4,475,781, Cl. 339-17.0LM.
Jonnes, Nelson, to American Polywater Corporation. Method and apparatus for selectively metering and spreading lubricant in a conduit. 4,475,629, Cl. 184-15.100.
Jorkasky, Richard J., II: *See*—
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Josephson, Charles B., to Phillips Petroleum Company. Method and compositions for acidizing and fracturing wells. 4,476,033, Cl. 252-8.55C.
Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., to British Petroleum Company p.l.c., The. Catalytic process for the production of methanol. 4,476,250, Cl. 518-715.000.
Jung, Dick Y.: *See*—
Kuhlmann, Erven J.; Guptill, Richard P.; Jung, Dick Y.; and Zang, Hyung K., 4,476,009, Cl. 208-8.0LE.
Kablitz, Hans-Jurgen; and Strametz, Helmut, to Hoechst Aktiengesellschaft. Process for removing catalyst residues from polyolefins. 4,476,297, Cl. 528-486.000.
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Kabushiki Kaisha Nagoya Boki Seisakusho: *See*—
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Kagami, Toshio: *See*—
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Kahn, David A., to Canadian Patents & Development Limited. Optical fiber power tap. 4,475,789, Cl. 350-96.150.
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Kaji, Gozo: *See*—
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Kakihara, Moriyuki, to Sumitomo Metal Industries, Ltd. Method and apparatus for shaping beads of welded steel section. 4,476,370, Cl. 219-78.160.
Kakii, Toshiaki: *See*—
Tanaka, Chihaya; Iwabuchi, Kazuo; Kakii, Toshiaki; and Toda, Yuichi, 4,475,935, Cl. 65-3.410.
Kakimi, Fujio, to Fuji Photo Film Co., Ltd. Preparation of electrostatographic toner material. 4,476,212, Cl. 430-137.000.
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Kalbskopf, Reinhard: *See*—
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Kalman, Gabor, to Garrett Corporation, The. Variable speed induction motor drive system. 4,476,424, Cl. 318-832.000.
Kalmanash, Michael H., to United Technologies Corporation. Constant current bias color switch for a beam penetration CRT. 4,476,485, Cl. 358-73.000.
Kambe, Mitsuru; and Fukada, Tomihiro, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Liquid metal mechanical pump. 4,475,866, Cl. 415-112.000.
Kamiya, Hideaki: *See*—
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Kanai, Kazuhiko; and Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Method of making a ceramic capacitor. 4,475,967, Cl. 156-89.000.
Kanamaru, Hitoshi; Amaya, Toshiyuki; Ishiguro, Kazutoyo; and Masaki, Keiji, to Universal Pioneer Corporation. Video disc recording and reproducing system. 4,476,499, Cl. 358-342.000.
Kane, Odile B.; George, Eric; Tromp, Chantal L.; and Goll, Serge, to Centre Regional De Transfusion Sanguine. Protective solution for preserving functional cells. 4,476,221, Cl. 435-2.000.
Kanebo Ltd.: *See*—
Koyama, Hiroaki; and Shimizu, Shigeo, 4,476,277, Cl. 524-509.000.
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Kaneko, Kenji, to Victor Company of Japan, Ltd. Horizontal scanning frequency multiplying circuit. 4,476,490, Cl. 358-148.000.
Kaneko, Tadashi: *See*—
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Kaneko, Takashi; and Shoji, Masashi, to Nippon Electric Company Ltd. Pulse signal processing circuit having a protection circuit against over-current breakdown. 4,476,427, Cl. 323-234.000.
Kanemoto, Joshiro: *See*—
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Kania, Charles M.: *See*—
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Kanno, Tadaaki; and Higashi, Yuichiro, to Ricoh Company, Ltd. Fixing apparatus for copying machine or the like. 4,475,804, Cl. 355-3.0FU.
Kano, Masafumi; Takahashi, Teruyuki; and Igarashi, Hiroshi, to Dai Nippon Toryo Co., Ltd. Aqueous dispersion type thermosetting coating composition. 4,476,271, Cl. 524-377.000.
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Kashio, Toshio, to Casio Computer Co., Ltd. Electronic musical instrument. 4,475,431, Cl. 84-1.270.
Kashiwaya, Mineo; Tanabe, Yoshiyuki; Yamada, Kinsaku; and Tsuruta, Hisato, to Hitachi, Ltd. Fuel injection apparatus for internal combustion engines. 4,475,518, Cl. 123-494.000.
Kasser, Jurgen: *See*—
Strauss, Karl-Peter; and Kasser, Jurgen, 4,476,582, Cl. 455-166.000.
Kasuya, Katsuhiko; Mori, Hidetomo; Fujiwara, Mitsuru; and Matsunaga, Tetsuzo, to Hitachi, Ltd. Screw rotor with tooth form produced by thermal deformation and gear backlash. 4,475,878, Cl. 418-201.000.
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Toyoda, Motoya; Ainoya, Masayuki; Kozawa, Hiroomi; and Katagiri, Shigenobu, 4,475,807, Cl. 355-15.000.
Kato, Hiroyasu; and Yagi, Kenkichi, to Toray Industries, Inc. Ultrafine fiber entangled sheet and method of producing the same. 4,476,186, Cl. 428-290.000.
Kato, Katsushi; Isomura, Shigesori; Kobayashi, Akio; and Kondo, Toshio, to Nippondenso Co., Ltd. Electronic control type fuel injection system. 4,475,501, Cl. 123-325.000.
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Katoh, Heizaburou, to Sankyo Manufacturing Company, Ltd. Roll feed apparatus. 4,475,678, Cl. 226-143.000.
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Tokinaga, Daizo; Kobayashi, Teruaki; Katori, Akiko; and Karasawa, Yoshiharu, 4,476,005, Cl. 204-403.000.
Katou, Takashi; Hayakawa, Masaharu; and Hirosawa, Hidenori, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Device for controlling the operation of a carburetor. 4,476,067, Cl. 261-39.00A.
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Grigorian, Alfred N.; Kovalev, Andrei P.; Lalov, Vitaly V.; Makarov, Nikolai D.; and Katrush, Rady V., 4,476,225, Cl. 435-287.000.
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Katsuhiro, Takahashi; Keiichi, Watanabe; Hiroyuki, Jinbo; and Naoto, Hoshihara, to Matsushita Electrical Industrial Co., Ltd. Method of forming lead storage batteries. 4,475,990, Cl. 204-2.100.
Katsuma, Makoto; Hiramatsu, Akira; Arakawa, Kazuhiko; and Murakami, Hiroyasu, to Canon Kabushiki Kaisha. Light measuring device for camera. 4,475,803, Cl. 354-481.000.
Katz, Elena; Ogan, Kenneth L.; and Scott, Raymond P. W., to Perkin-Elmer Corporation, The. Apparatus useful in identifying a solute. 4,476,026, Cl. 210-656.000.
Kausch, William L., to Minnesota Mining and Manufacturing Company. Negative-acting photoresist composition. 4,476,215, Cl. 430-281.000.
Kautz, Thomas O.; and Duenkel, Gerald A., to Johnson Service Company. Feedback transducer. 4,476,415, Cl. 318-135.000.
Kawagishi, Itsuo: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
Kawahara, Katsuyuki: *See*—
Sugishita, Kaneo; and Kawahara, Katsuyuki, 4,475,865, Cl. 415-36.000.
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Thermal flowmeter with temperature compensation. 4,475,388, Cl. 73-204.000.
Kawai, Kazuo: *See*—
Tamori, Michitoshi, deceased; Kobayashi, Hideo; Hashimoto, Kazuo; and Kawai, Kazuo, 4,476,539, Cl. 364-825.000.
Kawakami, Hirotarou; Yamakawa, Kazumi; Yasuda, Hiroshi; and Kitaoka, Teruhiko, to Asahi Corporation. Toy vehicle with inertia wheel. 4,475,305, Cl. 446-463.000.
Kawakami, Masafumi, to Sumitomo Rubber Industries, Ltd. Tire deflation warning device. 4,476,455, Cl. 340-58.000.
Kawakami, Shigezo; Omura, Hiroshi; and Ogawa, Katsumi, to Kabushiki Kaisha Kobe Seiko Sho. Metering feeder for liquid. 4,475,668, Cl. 222-52.000.

Kawamura, Takahide: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,476,532, Cl. 364-431.050.

Kawano, Kanji: *See—*
Konishi, Katsuo; Kawano, Kanji; Tamura, Kohji; and Abe, Mitsuo, 4,476,509, Cl. 360-119.000.

Kawasumi, Keiichi: *See—*
Watanabe, Ryozo; Kawasumi, Keiichi; Maeda, Shoichi; and Shoji, Takashi, 4,476,093, Cl. 422-61.000.

Kawata, Ichiro: *See—*
Tanaka, Toshiaki; Kawata, Ichiro; Nakagome, Keisuke; and Matsui, Koji, 4,475,973, Cl. 156-184.000.

Kazigaya, Kazuhiko: *See—*
Matsumoto, Tetsurou; and Kazigaya, Kazuhiko, 4,476,548, Cl. 365-233.000.

Kazlauskas, Gasparas. Front face tube to tube sheet welding apparatus. 4,476,367, Cl. 219-60.200.

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Ayata, Naoki; Koumura, Noboru; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Kazuma, Koji, 4,476,486, Cl. 358-78.000.

Kazumi, Masafumi: *See—*
Murata, Toshinori; Kuroyanagi, Tomomitsu; and Kazumi, Masafumi, 4,476,491, Cl. 358-167.000.

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Keilman, George W., to Advanced Technology Laboratories, Inc. Apparatus for testing ultrasonic transducers. 4,475,376, Cl. 73-1.0DV.

Keller, Hartmut; and Roy, Aroon S., to Siemens Aktiengesellschaft. Method and device for attaching disc-or plate-shaped target bodies to cooling plates for sputtering systems. 4,476,151, Cl. 427-34.000.

Keller, William F.; and Sibley, Richard D., to Koso International, Inc. Magnetically actuable shock responsive unit. 4,475,565, Cl. 137-39.000.

Kempf, August J.; Wilson, Kenneth E.; Hensens, Otto D.; Monaghan, Richard L.; Zimmerman, Sheldon B.; and Dulaney, Eugene L., to Merck & Co., Inc. Discovery of antibiotic L-681,217 in fermentation broth. 4,476,139, Cl. 424-283.000.

Kennedy, Melvin; Nagel, Dietmar; and Arad, Avi, to Nagel/Kennedy & Associates. Toy car. 4,475,618, Cl. 180-237.000.

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Kerney, Peter J.: *See—*
Young, Neils O.; Henderson, Robert; and Kerney, Peter J., 4,475,346, Cl. 62-6.000.

Kerr, Edwin R.: *See—*
Reinhard, Russell R.; Dorawala, Tansukhlal G.; and Kerr, Edwin R., 4,476,339, Cl. 585-379.000.

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Kessler, David R., to General Motors Corporation. Engine induction system. 4,475,486, Cl. 123-52.00M.

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Meyer, Leonard S., 4,475,723, Cl. 267-47.000.

Kiefer, Richard E.: *See—*
Tjornehoj, David J.; Dick, Donald E.; Kiefer, Richard E.; and Smith, Fred L., III, 4,475,398, Cl. 73-599.000.

Kikkoman Corporation: *See—*
Kitahara, Seiji; Mogi, Keitaro; Shimada, Thoziro; Noda, Fumio; and Tateyama, Yoshihiro, 4,476,144, Cl. 426-46.000.

Kim, Gwan; and Ernest, Michael V., to W. R. Grace & Co. Doubly promoted platinum group metal catalysts for emission control. 4,476,246, Cl. 502-304.000.

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Whittington, Billy J.; and Macke, Joseph E., 4,475,428, Cl. 84-1.010.

Kimberly-Clark Corporation: *See—*
Hlaban, James J., 4,475,913, Cl. 604-387.000.

Kimble, James B., to Phillips Petroleum Company. Oxidative dehydrogenation of paraffins. 4,476,344, Cl. 585-661.000.

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Ross, Norman C.; and Lettrich, Jeffrey J., 4,475,949, Cl. 106-14.350.

Kimura, Akio; Wada, Osamu; Iohara, Kohichi; and Matsui, Michikage, to Teijin Limited. High twist polyester multifilament yarn and fabric made therefrom. 4,475,330, Cl. 57-245.000.

Kimura, Hiroshi: *See—*
Minami, Shunji; and Kimura, Hiroshi, 4,475,617, Cl. 180-219.000.

Kimura, Tadashi, to Olympus Optical Co., Ltd. Epidark illumination system. 4,475,796, Cl. 350-525.000.

Kimura, Tokusuke; Kurosu, Fumio; Inouchi, Toshitsugu; and Komatsu, Masana, to Fujirebio Kabushiki Kaisha. Method of preparing gamma globulin suitable for intravenous administration. 4,476,109, Cl. 424-85.000.

Kinoshita, Takao; and Hosoe, Kazuya, to Canon Kabushiki Kaisha. Focus detecting system. 4,475,800, Cl. 354-406.000.

Kioritz Corporation: *See—*
Fukuoka, Takashi; and Nagao, Yoshiaki, 4,475,487, Cl. 123-73.00V.

Kiritani, Masataka; and Asao, Yasuzi, to Fuji Photo Film Co., Ltd. Process for the preparation of photographic resin-coated paper. 4,476,153, Cl. 427-40.000.

Kirkemo, Curtis L.: *See—*
Fino, James R.; and Kirkemo, Curtis L., 4,476,229, Cl. 436-500.000.

Kirkpatrick, Gregg R.: *See—*
Heiskell, Ronald E.; Kirkpatrick, Gregg R.; Newman, Garry F.; and Stewart, James D., 4,475,714, Cl. 254-89.00H.

Kirschbaum, Herbert S., to Westinghouse Electric Corp. Single phase four pole/six pole motor. 4,476,422, Cl. 318-776.000.

Kiser, Robert W. Turbo lubrication system. 4,475,567, Cl. 137-110.000.

Kishimoto, Satoru; Atsumi, Masaharu; and Sano, Yoshiaki, to Fujitsu Ten Limited; and Fijitsu Limited. One-terminal type level control circuit. 4,476,426, Cl. 323-226.000.

Kissling, Bruno; and Robinson, Tibor, to Sandoz Ltd. Composition and method for improving the fastness of anionic dyes and brighteners on cellulosic and polyamide fibers. 4,475,918, Cl. 8-495.000.

Kitahara, Seiji; Mogi, Keitaro; Shimada, Thoziro; Noda, Fumio; and Tateyama, Yoshihiro, to Kikkoman Corporation. Process for producing concentrated shoyu. 4,476,144, Cl. 426-46.000.

Kitamoto, Tatsuji: *See—*
Matsufuji, Akihiro; Umemura, Shizuo; Aonuma, Masashi; Miyatsuka, Hajime; and Kitamoto, Tatsuji, 4,475,946, Cl. 75-0.5AA.

Kitamura, Takashi, to Canon Kabushiki Kaisha. Dot recording apparatus. 4,476,474, Cl. 346-160.000.

Kitaoka, Teruhiko: *See—*
Kawakami, Hirotarou; Yamakawa, Kazumi; Yasuda, Hiroshi; and Kitaoka, Teruhiko, 4,475,305, Cl. 446-463.000.

Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, to Fujisawa Pharmaceutical Co., Ltd. Peptide, process for preparation thereof and use thereof. 4,476,050, Cl. 260-112.50R.

Kittacher, Peter; Schumann, Klaus; Altenschopfer, Theodor; Haumann, Wolfgang; and Smolka, Heinz G., to Henkel Kommanditgesellschaft auf Aktien. Processes and means for perfuming packaging containers. 4,475,663, Cl. 220-87.000.

Kiyasu, John Y. Heart attack screening method, apparatus and kit for same. 4,476,016, Cl. 210-198.200.

Kiyoura, Tadamitsu: *See—*
Honda, Tadatoshi; Matsuda, Fujio; Kiyoura, Tadamitsu; and Terada, Kazuhiro, 4,476,310, Cl. 548-508.000.

Klabunde, Hans: *See—*
Desplats, Andre; and Klabunde, Hans, 4,475,717, Cl. 254-264.000.

Klarstrom, Dwaine L., to Cabot Corporation. Oxidation-resistant nickel alloy. 4,476,091, Cl. 420-443.000.

Klee, David J., to Air Products and Chemicals, Inc. Dual-flow cryogenic freezer. 4,475,351, Cl. 62-63.000.

Kleinloh, Werner; and Thronberens, Werner, to Chemische Werke Huls Aktiengesellschaft. Process for the production of a diaphragm for electrolytic cells. 4,475,985, Cl. 162-219.000.

Klie, Jurgen; and Wellendorf, Klaus, to Dr. -Ing. Rudolf Hell GmbH. Method and circuit arrangement for partial electronic retouch in color image reproduction. 4,476,487, Cl. 358-80.000.

Kling, Michael J.: *See—*
Marino, Joseph A.; Kling, Michael J.; and Roth, Sydney J., 4,476,531, Cl. 364-431.010.

Klingenberg, Uwe, to Maschinenfabrik Alfred Schmermund GmbH & Co. Storage device for packages. 4,475,643, Cl. 198-347.000.

Kljucaricek, Peter. Perin rectifier apparatus. 4,476,521, Cl. 363-101.000.

Klockner-Werke AG: *See—*
Langhammer, Hans-Jurgen, 4,475,581, Cl. 164-100.000.

Klokholm, Erik: *See—*
Aboaf, Joseph A.; Klokholm, Erik; and McGuire, Thomas R., 4,476,454, Cl. 338-32.00R.

Kloppe, Herbert: *See—*
Vogt, Hans; Kloppe, Herbert; and Spiegel, Erwin, 4,475,765, Cl. 296-210.000.

Klussmann, Wilfried: *See—*
Grieb, Hubert; and Klussmann, Wilfried, 4,475,586, Cl. 165-134.00R.

Knapp, Gordon G.: *See—*
Dubeck, Michael; and Knapp, Gordon G., 4,476,331, Cl. 568-861.000.

Kniele, Wolfgang: *See—*
Dietzsch, Kurt; Oess, Hans-Dieter; Kniele, Wolfgang; Zander, Joachim; and Jeske, Gustav, 4,475,445, Cl. 98-2.050.

Kniese, Heiner: *See—*
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; Tilch, Willi; and Siol, Werner, 4,476,182, Cl. 428-265.000.

Knifton, John F.: *See—*
Lin, Jiang-Jen; and Knifton, John F., 4,476,326, Cl. 568-487.000.

Knize, Randall J.; and Cecchi, Joseph L., to United States of America, Energy. Method of enhancing selective isotope desorption from metals. 4,476,100, Cl. 423-249.000.

Knoedl, George, Jr., to AT&T Bell Laboratories. Duplex signaling circuit. 4,476,557, Cl. 370-28.000.

Knoedler Manufacturers, Inc.: *See—*
Foster, Daniel S., 4,475,707, Cl. 248-636.000.

Knogo Corporation: *See—*
Cooper, Michael N.; and Pokalsky, Peter A., 4,476,459, Cl. 340-572.000.

Knoth, Werner D., to Veba-Glas AG. Cutting device for sectioning liquid glass strand. 4,475,938, Cl. 65-334.000.

Koball, Bruce R.: *See—*
Bilbrey, Robert A.; Koball, Bruce R.; and Loram, John S. H., 4,475,666, Cl. 222-14.000.

Kobayashi, Akio: *See*—
Kato, Katsushi; Isomura, Shigenori; Kobayashi, Akio; and Kondo, Toshio, 4,475,501, Cl. 123-325.000.
Kobayashi, Hideo: *See*—
Tamori, Michitoshi, deceased; Kobayashi, Hideo; Hashimoto, Kazuo; and Kawai, Kazuo, 4,476,539, Cl. 364-825.000.
Kobayashi, Izumi: *See*—
Takeda, Hiroyuki; Kudo, Kunio; Kobayashi, Izumi; Ojiri, Yohsuke; Oda, Mitsuyuki; and Sugiyama, Sakae, 4,475,394, Cl. 73-598.000.
Kobayashi Masaaki: *See*—
Isaka, Takenobu; and Kobayashi Masaaki, 4,476,500, Cl. 360-10.300.
Kobayashi, Nobuyuki; Itoh, Hiroshi; and Sugiura, Yoichi, to Toyota Jidosha Kabushiki Kaisha. Air-fuel ratio control method and apparatus for an internal combustion engine. 4,475,517, Cl. 123-489.000.
Kobayashi, Teruaki: *See*—
Tokinaga, Daizo; Kobayashi, Teruaki; Katori, Akiko; and Karasawa, Yoshiharu, 4,476,005, Cl. 204-403.000.
Kobayashi, Yasushi: *See*—
Yamawaki, Satoshi; Sugihara, Atsushi; Kobayashi, Yasushi; Ishida, Hiroshi; Kuramasu, Yukio; and Gotoh, Ichisei, 4,475,960, Cl. 148-26.000.
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing 3,3,3-trifluoropropyl substituted phenol. 4,476,328, Cl. 568-775.000.
Koch, Dieter; and Risler, Wolfgang, to Bruker-Analytische Messtechnik GmbH. Mixing chamber. 4,475,821, Cl. 366-160.000.
Koch, Klaus; and Syrbius, Gerhard, to Hermann Berstorff Maschinenbau GmbH. Bark processing machine. 4,475,452, Cl. 100-117.000.
Kock, Erhard; and Zielinski, Leo J., to Champion Spark Plug Co. Spray booth apparatus. 4,475,447, Cl. 98-115.0SB.
Kodama, Hiroyuki, to Nippon Kogaku K.K. Phosphate optical glass. 4,476,233, Cl. 501-46.000.
Kodama, Teruo: *See*—
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,476,092, Cl. 422-4.000.
Koerner, Gotz; Nickel, Friedhelm; Rott, Hans; and Schmidt, Gunter, to Th. Goldschmidt AG. Method of producing finely divided, stable oil-in-water emulsions of organopolysiloxanes. 4,476,282, Cl. 524-837.000.
Koester, Harold E.; and Davids, Robert E., to International Game Technology. Coin handling apparatus. 4,475,564, Cl. 133-8.00R.
Kohama, Tokio: *See*—
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, 4,475,388, Cl. 73-204.000.
Koike, Hiroyuki; and Kato, Shigehiro, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Magnetic card transporting apparatus. 4,476,507, Cl. 360-104.000.
Koizumi, Akio; and Yamagishi, Hiroshi, to Sony Corporation. Power amplifier. 4,476,436, Cl. 330-10.000.
Kokusai Denshin Denwa Co., Ltd.: *See*—
Tamori, Michitoshi, deceased; Kobayashi, Hideo; Hashimoto, Kazuo; and Kawai, Kazuo, 4,476,539, Cl. 364-825.000.
Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See*—
Yamamoto, Kazumasa, 4,475,415, Cl. 74-543.000.
Komatsu, Fumito. Generator. 4,476,406, Cl. 310-67.00A.
Komatsu, Hitoshi: *See*—
Fujisawa, Hiromichi; Endo, Hirohide; and Komatsu, Hitoshi, 4,476,495, Cl. 358-262.000.
Komatsu, Masana: *See*—
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Kominami, Yasuo: *See*—
Watanabe, Kazuo; Kominami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, 4,476,502, Cl. 360-65.000.
Komoda, Hirohisa; and Ishihara, Masatomo, to Toyo Seikan Kaisha Ltd.; and Tokan Kogyo Co. Ltd. Method and apparatus for producing a multi-layer laminated resin film. 4,476,080, Cl. 264-176.00R.
Komori, Masamichi: *See*—
Tsunoda, Kazuhiko; Tsurumi, Yasuyuki; and Komori, Masamichi, 4,475,622, Cl. 181-227.000.
Komurasaki, Keiichi, to Mitsubishi Denki Kabushiki Kaisha. Bearing cooling mechanism for vehicular A.C. generator. 4,476,405, Cl. 310-60.00R.
Kondo, Shiroh, to Alps Electric Co., Ltd. Rotary encoder. 4,476,457, Cl. 340-347.00P.
Kondo, Toshio: *See*—
Kato, Katsushi; Isomura, Shigenori; Kobayashi, Akio; and Kondo, Toshio, 4,475,501, Cl. 123-325.000.
Konishi, Katsuo; Kawano, Kanji; Tamura, Kohji; and Abe, Mitsuo, to Hitachi, Ltd. Thin film magnetic head and method of manufacturing the same. 4,476,509, Cl. 360-119.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Moriguchi, Hiroyuki; Shimura, Takeo; Kaneko, Tadashi; Nomori, Hiroyuki; and Nishiwaki, Akira, 4,476,209, Cl. 430-95.000.
Konno, Shigeru, to Scovill Japan Kabushiki Kaisha. Button. 4,475,273, Cl. 24-108.000.
Konomura, Yutaka, to Olympus Optical Co., Ltd. Endoscopic television apparatus. 4,475,539, Cl. 128-6.000.
Konrath, Karl: *See*—
Greiner, Max; and Konrath, Karl, 4,475,521, Cl. 123-502.000.
Koomey, Inc.: *See*—
Loup, Ronald L., 4,475,568, Cl. 137-116.000.
Koppelmann, Eldo K., to Santrade Ltd. Retractable rotary cutting tool. 4,475,852, Cl. 408-73.000.
Kordas, Friedel, to Intensiv-Filter GmbH & Co. KG. Pressure-gas connection for dust-laden gas filters. 4,475,934, Cl. 55-302.000.
Kordomenos, Panagiotis I., to Ford Motor Company. Thermosetting coating composition—VI. 4,476,259, Cl. 523-400.000.
Korenberg, Jakob, to York-Shipley, Inc. Fluidized bed reactor utilizing a plate support and method of operating the reactor. 4,475,467, Cl. 110-245.000.
Kosaka, Yuzo: *See*—
Ohtani, Mikio; Wada, Hiroshi; and Kosaka, Yuzo, 4,476,222, Cl. 435-14.000.
Koso International, Inc.: *See*—
Keller, William F.; and Sibley, Richard D., 4,475,565, Cl. 137-39.000.
Kossev, Danail K.: *See*—
Rashev, Tzolo V.; Valkov, Lyudmil K.; Rasheva, Ivanka A.; Stoyanov, Stoyan M.; Kossev, Danail K.; and Lambev, Yordan G., 4,476,565, Cl. 373-50.000.
Kosugi, Seiji, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Solenoid actuator. 4,476,451, Cl. 335-262.000.
Kosuzume, Hiroshi: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,476,127, Cl. 424-250.000.
Kotani, Sumihisa: *See*—
Suefuji, Kazutaka; Oguni, Kensaku; Kotani, Sumihisa; and Tojo, Kenji, 4,475,360, Cl. 62-324.100.
Kotsen, Marat E.: *See*—
Yakubovich, Solomon L.; Kotsen, Marat E.; Golubnichy, Vladislav V.; Gerling, Voldemar E.; and Stepanov, Jury N., 4,476,388, Cl. 250-361.00R.
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Ayata, Naoki; Koumura, Noboru; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Kazuma, Koji, 4,476,486, Cl. 358-78.000.
Koumura, Takashi: *See*—
Hasegawa, Shumpei; Koumura, Takashi; Mieno, Toshiyuki; and Okawa, Kiyoshi, 4,475,505, Cl. 123-339.000.
Kouno, Shigeyoshi; and Okajima, Masakazu, to Amada Company, Limited. Blanking apparatus. 4,475,424, Cl. 83-549.000.
Kovacs, Bela V.; Nowicki, Roman M.; and Stickels, Charles A., to Ford Motor Company. Method of making high strength ferritic ductile iron parts. 4,475,956, Cl. 148-3.000.
Kovalev, Andrei P.: *See*—
Grigorian, Alfred N.; Kovalev, Andrei P.; Lalov, Vitaly V.; Makarov, Nikolai D.; and Katrush, Rady V., 4,476,225, Cl. 435-287.000.
Koyama, Hiroaki; and Shimizu, Shigeo, to Kanebo Ltd. Resin composition containing granular or powdery phenol-aldehyde resin. 4,476,277, Cl. 524-509.000.
Koyanagi, Kohki: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
Kozawa, Hiroomi: *See*—
Toyoda, Motoya; Ainoya, Masayuki; Kozawa, Hiroomi; and Katagiri, Shigenobu, 4,475,807, Cl. 355-15.000.
Kozawa, Yutaka: *See*—
Mizuno, Saburo; Kozawa, Yutaka; and Ogata, Tosikazu, 4,475,589, Cl. 165-166.000.
Kraegen, Edward W.; Lazarus, Leslie; Bell, David J.; and Chisholm, Donald J., to Garvan Research Development Ltd., The; and Commonwealth of Australia, The. Apparatus for improving blood sugar control in diabetics. 4,475,901, Cl. 604-67.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Leupers, Hans-Joachim, 4,475,710, Cl. 251-30.000.
Kreider, Carleen: *See*—
Ori, Peter; and Kreider, Carleen, 4,475,667, Cl. 222-39.000.
Kremerova, Liza: *See*—
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Krishnakumar, Suppayan M.: *See*—
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Krob, Erwin: *See*—
Bauer, Helmut; and Krob, Erwin, 4,475,742, Cl. 280-632.000.
Kroll, Hartmut: *See*—
Muller, Erhard; Christ, Richard; and Kroll, Hartmut, 4,476,394, Cl. 250-507.100.
Kruncos, Francis E., to Brunswick Corporation. Temperature compensated flow sensor. 4,475,407, Cl. 73-861.530.
Kruyt, Jacob A.: *See*—
Nette, Aart; and Kruyt, Jacob A., 4,475,846, Cl. 405-17.000.
Kubach, Hans: *See*—
Hascher-Reichl, Asta; Kubach, Hans; and Gross, Werner, 4,475,690, Cl. 239-585.000.
Kubens, Rolf: *See*—
Cornely, Wolfgang; Mehesch, Hans; Meyer, Frank; Kubens, Rolf; and Winkelmann, Martin, 4,475,847, Cl. 405-264.000.
Kubota, Takeshi: *See*—
Nakamori, Yutori; Matsumura, Tsuyoshi; and Kubota, Takeshi, 4,476,098, Cl. 422-140.000.
Kuchenbrod, Gary W. Portable cooking apparatus. 4,475,528, Cl. 126-9.00R.
Kudo, Kunio: *See*—
Takeda, Hiroyuki; Kudo, Kunio; Kobayashi, Izumi; Ojiri, Yohsuke; Oda, Mitsuyuki; and Sugiyama, Sakae, 4,475,394, Cl. 73-598.000.

Kuhlmann, Erven J.; Guptill, Richard P.; Jung, Dick Y.; and Zang, Hyung K., to Texaco Inc. Process for improving the hydrogen donor properties of a coal liquefaction solvent. 4,476,009, Cl. 208-8.0LE.

Kulprathipanja, Santi; Neuzil, Richard W.; and Landis, Arthur M., to UOP Inc. Separation of sucrose from thick juice. 4,475,954, Cl. 127-46.300.

Kumadaki, Itsumaro: *See*—
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,476,328, Cl. 568-775.000.

Kumano, Nobuo: *See*—
Ueyama, Akihide; Kumano, Nobuo; and Takase, Hidetomo, 4,476,389, Cl. 250-363.00S.

Kume, Toyohiko: *See*—
Saito, Junichi; and Kume, Toyohiko, 4,475,997, Cl. 204-158.00R.

Kung, Hsiang-Fu, to Hoffmann-La Roche Inc. Method for the extraction of immune interferon. 4,476,049, Cl. 260-112.00R.

Kuo, Yu Shen, to United States of America, National Aeronautics and Space Administration. Ingot slicing machine and method. 4,475,527, Cl. 125-13.00R.

Kurahashi, Takashi: *See*—
Fukatsu, Yoshiaki; Kurahashi, Takashi; Matsui, Kazuma; and Ito, Hiroki, 4,476,419, Cl. 318-444.000.

Kuramasu, Yukio: *See*—
Yamawaki, Satoshi; Sugihara, Atsushi; Kobayashi, Yasushi; Ishida, Hiroshi; Kuramasu, Yukio; and Gotoh, Ichisei, 4,475,960, Cl. 148-26.000.

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Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,476,328, Cl. 568-775.000.

Kuriyama, Yasuhisa; Kakuda, Minoru; and Nitoh, Shoichi, to Mitsubishi Gas Chemical Co., Inc. Process for producing olefin oxides. 4,476,314, Cl. 549-531.000.

Kurosu, Fumio: *See*—
Kimura, Tokusuke; Kurosu, Fumio; Inouchi, Toshitsugu; and Komatsu, Masana, 4,476,109, Cl. 424-85.000.

Kuroyanagi, Tomomitsu: *See*—
Murata, Toshinori; Kuroyanagi, Tomomitsu; and Kazumi, Masafumi, 4,476,491, Cl. 358-167.000.

Kurtz, John A.; and Cousens, Donald E., to Fairchild Camera & Instrument Corp. Cover gas control of bonding ball formation. 4,476,365, Cl. 219-56.220.

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Yokota, Kenji; Kusano, Hiroshi; and Sugimoto, Ryuichi, 4,476,304, Cl. 544-244.000.

Kusunoki, Shigeru; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. High frequency heating apparatus. 4,476,362, Cl. 219-10.55F.

Kuwabara, Takao, to Hitachi, Ltd. Method of and system for controlling hydraulic turbine. 4,475,334, Cl. 60-398.000.

Kuziemka, Edmund J.: *See*—
Graziano, Frank D.; and Kuziemka, Edmund J., 4,476,264, Cl. 523-435.000.

Kva-Spil Limited: *See*—
Flakk, Egil, 4,475,324, Cl. 52-209.000.

Kvita, Vratislav; and Kaschig, Jurgen, to Ciba-Geigy Corporation. 2-Substituted 5-vinylpyrimidines, polymers obtainable therefrom and preparation thereof. 4,476,305, Cl. 544-296.000.

Kyander, Aarno: *See*—
Paulsson, Bertil; and Kyander, Aarno, 4,475,862, Cl. 414-513.000.

Kyburz, Emilio: *See*—
Aschwanden, Werner; and Kyburz, Emilio, 4,476,308, Cl. 546-208.000.

L'Abbe, Richard; St. Laurent, Andre M.; Newman, James A.; and Gallup, Brian M., to Canadian Patents & Development Limited. Explosive ordinance disposal helmet. 4,475,248, Cl. 2-2.500.

Labeeuw, Bernard; and Salhi, Ali, to Sanofi. Antibiotic derivatives, derived from cephalosporins with thiazolyl substituents, pharmaceutical preparations and salts thereof. 4,476,123, Cl. 424-246.000.

Label-Aire Inc.: *See*—
Bartl, James C., 4,475,978, Cl. 156-497.000.

Labelle, Henri M. R., to Martinray Industries Ltd. Closure hinge improvements. 4,475,268, Cl. 16-355.000.

Lacour, Alain P.: *See*—
Dostert, Philippe L.; Lacour, Alain P.; Langlois, Michel; and Strolin-Benedetti, Margherita, 4,476,136, Cl. 424-272.000.

Lai, Fang-shi J.; and Schulz, Ronald N., to International Business Machines Corporation. Deep trench etching process using CCl_2F_2/Ar and CCl_2F_2/O_2 RIE. 4,475,982, Cl. 156-643.000.

Lai, Juey H.: *See*—
Douglas, Richard B.; Fure, Barbara J.; and Lai, Juey H., 4,476,217, Cl. 430-326.000.

Lakatos, Andras I.: *See*—
Daughton, John W.; Lakatos, Andras I.; Brady, Terence W.; Bryce, James R.; Evanitsky, Eugene S.; and Baker, George E., 4,475,806, Cl. 355-14.00R.

Lalov, Vitaly V.: *See*—
Grigorian, Alfred N.; Kovalev, Andrei P.; Lalov, Vitaly V.; Makarov, Nikolai D.; and Katrush, Rady V., 4,476,225, Cl. 435-287.000.

Lambev, Yordan G.: *See*—
Rashev, Tzolo V.; Valkov, Lyudmil K.; Rasheva, Ivanka A.; Stoyanov, Stoyan M.; Kossev, Danail K.; and Lambev, Yordan G., 4,476,565, Cl. 373-50.000.

Lamirande, Donald J.: *See*—
Griffin, Michael D.; and Lamirande, Donald J., 4,476,068, Cl. 261-65.000.

Lander, David R. Means for assisting in locating an object. 4,476,469, Cl. 340-825.490.

Landis, Arthur M.: *See*—
Kulprathipanja, Santi; Neuzil, Richard W.; and Landis, Arthur M., 4,475,954, Cl. 127-46.300.

Landis, John M.: *See*—
Asick, John C.; Douty, George H.; Goodman, Joseph R.; Jones, Kermit M., Jr.; Landis, John M.; Snyder, Clair W., Jr.; Woratyla, John A.; and Zell, Dale R., 4,475,781, Cl. 339-17.0LM.

Landry, Vincent E.: *See*—
MacLeod, Robert B., Jr.; Landry, Vincent E.; and Gelardi, Paul J., 4,475,700, Cl. 242-197.000.

Lane, Joseph A.: *See*—
Hull, Robert; and Lane, Joseph A., 4,475,932, Cl. 55-170.000.

Langer, Alois A.; and Heilman, Marlin S., to Mieczyslaw Mirowski. Arrhythmia detection and defibrillation system and method. 4,475,551, Cl. 128-419.00D.

Langhammer, Hans-Jurgen, to Klockner-Werke AG. Method and apparatus for fabricating glad ingots. 4,475,581, Cl. 164-100.000.

Langlois, Michel: *See*—
Dostert, Philippe L.; Lacour, Alain P.; Langlois, Michel; and Strolin-Benedetti, Margherita, 4,476,136, Cl. 424-272.000.

LaRue, John C.: *See*—
Ajagu, Christopher O.; Libby, Paul A.; and LaRue, John C., 4,475,392, Cl. 73-432.00R.

Lauchner, John K., to Motorola, Inc. Adjustable directional coupler and power detector utilizing same. 4,476,447, Cl. 333-111.000.

Laveckis, Regina G., to William Carter Company, The. Garment with a convertible cuff. 4,475,253, Cl. 2-269.000.

Lawson, David A. Energy conversion apparatus. 4,476,397, Cl. 290-54.000.

Lawson, Kenneth T., to Davy McKee (Poole) Ltd. Method of slitting or edge trimming strip material. 4,475,422, Cl. 83-13.000.

Lazare, Leon, to Puraq Company, The. Absorption refrigeration process. 4,475,352, Cl. 62-101.000.

Lazare, Leon, to Puraq Company, The. Serial absorption refrigeration process. 4,475,353, Cl. 62-101.000.

Lazarus, Leslie: *See*—
Kraegen, Edward W.; Lazarus, Leslie; Bell, David J.; and Chisholm, Donald J., 4,475,901, Cl. 604-67.000.

Leadon, Leon R.: *See*—
Jackson, Craig A.; and Leadon, Leon R., 4,475,630, Cl. 187-9.00R.

Lecomte, Alain: *See*—
Rinck, Jean; and Lecomte, Alain, 4,475,479, Cl. 118-707.000.

Ledenican, Robert L. Sign board. 4,475,300, Cl. 40-600.000.

Lee, Robert M. Combination gun case and protective apparel. 4,475,247, Cl. 2-2.500.

Le Gars, Philippe: *See*—
Gaudin, Daniel; and Le Gars, Philippe, 4,476,578, Cl. 455-115.000.

Lehnhoff, Richard N.: *See*—
Licata, Joseph P.; Lehnhoff, Richard N.; and Terkoski, Frank J., 4,476,416, Cl. 318-283.000.

Leibowitz, Marshall; Crandall, Richard; and Faughnan, Brian, to Timex Corporation. Electrochromic films having improved etch resistance. 4,475,795, Cl. 350-357.000.

Le Marchand, Claude: *See*—
Gerard, Jean-Louis; and Le Marchand, Claude, 4,475,633, Cl. 188-73.450.

Lennox Industries, Inc.: *See*—
Cherington, Floyd E.; Adams, Charles W.; and Schneider, Elrede F., 4,475,621, Cl. 181-212.000.

Lentz, Thomas P., to MTS Systems Corporation. Device to preload loading connections. 4,475,403, Cl. 73-798.000.

Lersmacher, Bernhard; and van Kollenburg, Ludovicus W. J., to U.S. Philips Corporation. Method of making crucibles for flameless atomic absorption spectroscopy. 4,476,163, Cl. 427-249.000.

Lesiecki, Gerald, to Allis-Chalmers Corporation. Bushing seal valve. 4,475,736, Cl. 277-3.000.

Lettrich, Jeffrey J.: *See*—
Ross, Norman C.; and Lettrich, Jeffrey J., 4,475,949, Cl. 106-14.350.

Leung, Chun K.: *See*—
Johnson, Edwin A.; and Leung, Chun K., 4,475,511, Cl. 123-436.000.

Leupers, Hans-Joachim, to Kraftwerk Union Aktiengesellschaft. Electro-hydraulic control actuator for turbine valves. 4,475,710, Cl. 251-30.000.

Leutz, Donald C., to Douglas Components Corporation. Telescoping steering shaft with adjusted lash. 4,475,744, Cl. 280-775.000.

Leviton Manufacturing Company, Inc.: *See*—
Bienwald, Wolfgang F., 4,476,359, Cl. 200-156.000.

Lewis, Hal B. Blowdown apparatus and method. 4,475,356, Cl. 62-183.000.

Leybold-Heraeus GmbH: *See*—
Forth, Hans-Joachim; and Heisig, Rolf, 4,475,345, Cl. 62-6.000.

Leytes, Lev J.: *See*—
Scharff, Daniel H.; and Leytes, Lev J., 4,476,017, Cl. 210-94.000.

Liang, Anthony; and Cox, Ronald W., to GTE Products Corporation. Non-aqueous brazing alloy paste. 4,475,959, Cl. 148-24.000.

Libby, Paul A.: *See*—
Ajagu, Christopher O.; Libby, Paul A.; and LaRue, John C., 4,475,392, Cl. 73-432.00R.

Licata, Joseph P.; Lehnhoff, Richard N.; and Terkoski, Frank J., to General Motors Corporation. Power window control for motor vehicle window. 4,476,416, Cl. 318-283.000.

Light Signatures, Inc.: *See*—
Goldman, Robert N., 4,476,468, Cl. 340-825.034.

Lin, Jiang-Jen; and Knifton, John F., to Texaco Inc. Process for the synthesis of ethanol and acetaldehyde using cobalt compounds with novel promoters. 4,476,326, Cl. 568-487.000.

Lin, Liang-Tsai, to Motorola, Inc. Write strobe generator for clock synchronized memory. 4,476,401, Cl. 307-269.000.

Lin, See: *See*—
Marvel, Carl S.; and Lin, See, 4,476,062, Cl. 260-544.00B.

Lindahl, Sune: *See*—
Henriksson, Goran; and Lindahl, Sune, 4,475,441, Cl. 91-387.000.

Lindauer Dornier Gesellschaft mbH: *See*—
Dornier, Peter, 4,475,417, Cl. 26-3.000.

Linde Aktiengesellschaft: *See*—
Asztalos, Stefan, 4,475,930, Cl. 55-26.000.
Forster, Franz, 4,475,443, Cl. 91-499.000.

Linder, Ernst: *See*—
Eckert, Konrad; Muller, Klaus; Linder, Ernst; Polach, Wilhelm; and Britsch, Heinz, 4,475,524, Cl. 123-568.000.

Linder, Gerald S. Universal measuring attachment for esophageal stethoscopes. 4,475,555, Cl. 128-670.000.

Lindner, Bernd: *See*—
Repenning, Detlev; and Lindner, Bernd, 4,476,201, Cl. 429-62.000.

Lines, Ellwood L., Jr.: *See*—
Cianciolo, Alfred D.; and Lines, Ellwood L., Jr., 4,476,251, Cl. 521-110.000.

Linstromberg, William J., to Whirlpool Corporation. Ice production rate selector for ice maker. 4,475,357, Cl. 62-157.000.

List, Hans. Fuel injection pump for internal combustion engines. 4,475,514, Cl. 123-458.000.

Littelfuse, Inc.: *See*—
Borzoni, John M., 4,475,783, Cl. 339-19.000.
Olson, Harry W.; and Borzoni, John M., 4,475,283, Cl. 29-720.000.

Little, Roger G., to Spire Corporation. Fiber optic coupler. 4,475,790, Cl. 350-96.210.

Litton Industrial Products, Inc.: *See*—
Matej, Ronald J., 4,475,371, Cl. 72-68.000.

Litton Systems, Inc.: *See*—
Anderson, Robert H., 4,476,465, Cl. 340-783.000.

Liu, Nan-I, to General Electric Company. Linear low density polyethylene impact modifier for thermoplastic polyesters. 4,476,274, Cl. 524-445.000.

Livingston, Waylon A. Apparatus for ultrasonic testing of tubular goods. 4,475,399, Cl. 73-622.000.

Lloyd, Ronald. Ostomy devices. 4,475,908, Cl. 604-339.000.

Locher, Johannes: *See*—
Flaig, Ulrich; and Locher, Johannes, 4,475,513, Cl. 123-446.000.

Lockheed Corporation: *See*—
Cronin, Michael J., 4,476,395, Cl. 290-6.000.

"LOESCH"-Verpackungstechnik GmbH & Co KG: *See*—
Dammig, Werner; and Moller, Heinz, 4,475,426, Cl. 83-887.000.

Loev, Bernard; and Huang, Fu-Chih, to USV Pharmaceutical Corporation. Benzobisoxazinetetrones and anti-allergic use thereof. 4,476,125, Cl. 424-246.000.

Logan, John K. Electronic test fixture. 4,476,433, Cl. 324-158.00P.

Lok, Kar P.: *See*—
Croucher, Melvin D.; Duff, James M.; Hair, Michael L.; Lok, Kar P.; and Wong, Raymond W., 4,476,210, Cl. 430-114.000.

London Nuclear Limited: *See*—
Bonnici, Paul J.; and Denault, Robert P., 4,476,047, Cl. 252-626.000.

Long, John V.; and Gagliani, John. Low density, modified polyimide foams and methods of making same. 4,476,254, Cl. 521-180.000.

Lonsmin, Victor. Decoration for a novelty. 4,475,297, Cl. 40-486.000.

Loos, Hendricus G. Bipolar fog abatement system. 4,475,927, Cl. 55-10.000.

Loram, John S. H.: *See*—
Bilbrey, Robert A.; Koball, Bruce R.; and Loram, John S. H., 4,475,666, Cl. 222-14.000.

Lorke, Horst: *See*—
Mees, Bernhard; and Lorke, Horst, 4,476,034, Cl. 252-49.500.

Loshing, Clement T.; and Thompson, Ralph J. System for monitoring, transmitting and conditioning of information gathered at selected locations. 4,476,535, Cl. 364-480.000.

Lotz, Horst K., to Aute Gesellschaft fuer autogene Technik mbH. Flame cutting machine. 4,475,719, Cl. 266-48.000.

Loup, Ronald L., to Kooney, Inc. Pressure reducing and regulating valve. 4,475,568, Cl. 137-116.000.

Lovgren, Ernest G.; and Goyal, Prashant K., to Chicopee. Process and apparatus for producing uniform fibrous web at high rate of speed. 4,475,271, Cl. 19-105.000.

LTV Aerospace and Defense Company: *See*—
Bourland, Gordon, Jr.; and Price, Howard M., 4,475,624, Cl. 181-292.000.

Lubowitz, Hyman R.; and Sheppard, Clyde H., to Boeing Company, The. Thermally stable polysulfone compositions for composite structures. 4,476,184, Cl. 428-288.000.

Lucas Industries Public Limited Company: *See*—
Mowbray, Dorian F., 4,475,515, Cl. 123-467.000.

Ludwig, Allen C.; Wolter, Larry W.; and Frazier, Henry F., to Southwest Research Institute. Emulsion and method of making same. 4,475,953, Cl. 106-287.240.

Lukacs, Janos: *See*—
Borer, Werner; Lukacs, Janos; and Spalinger, Hugo, 4,476,071, Cl. 264-15.000.

Lukawich, Joseph, to Singer Company, The. Cartridge and receptacle for use with an electronically controlled appliance. 4,475,784, Cl. 339-43.000.

Lummus Company, The: *See*—
Tsao, Utah, 4,476,160, Cl. 422-144.000.

Lutz, Andre : *See*—
Heymes, Rene ; and Lutz, Andre , 4,476,122, Cl. 424-246.000.

Lydell, Martin G. Transmission. 4,475,495, Cl. 123-197.0AB.

Lyle, W. D.: *See*—
Fitch, John L.; and Lyle, W. D., 4,475,386, Cl. 73-151.000.

Lystad, Leonard A., to General Motors Corporation. Windshield wiper system. 4,475,263, Cl. 15-250.190.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Muhlratzer, August; Stemmler, Bruno; and Zeilinger, Hans, 4,475,958, Cl. 148-6.350.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Wanke, Johannes; Difflipp, Kurt; and Ruh, Jurgen, 4,475,459, Cl. 101-410.000.

Macho, Heinz: *See*—
Poppe, Werner; van Rijekevorsel, Rainer; Ruppender, Uwe; and Macho, Heinz, 4,476,149, Cl. 427-2.000.

Mackal, Glenn H. Automatic inflator. 4,475,664, Cl. 222-5.000.

Macke, Joseph E.: *See*—
Whittington, Billy J.; and Macke, Joseph E., 4,475,428, Cl. 84-1.010.

MacLeod, Robert B., Jr.; Landry, Vincent E.; and Gelardi, Paul J., to Shape Inc. Tape cassette dust door latch spring assembly. 4,475,700, Cl. 242-197.000.

Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Mizuno, Masami; Yasuda, Yasushi; and Nakata, Akira, to Nippon Soda Company Limited. Thiazolino-[3,2-a]-1,3,5-triazine-2-one-4-(one or thione) derivatives. 4,476,303, Cl. 544-223.000.

Maeda, Shoichi: *See*—
Watanabe, Ryozo; Kawasumi, Keiichi; Maeda, Shoichi; and Shoji, Takashi, 4,476,093, Cl. 422-61.000.

Maeda, Tetsuro; Ohoka, Susumu; Shingai, Masafumi; and Igawa, Haruo, to Denki Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin compositions. 4,476,266, Cl. 524-128.000.

Maehara, Kenso: *See*—
Ishii, Koji; Shinmoto, Takahiko; Maehara, Kenso; and Honkawa, Yoshinori, 4,475,456, Cl. 101-144.000.

Maehara, Nobunori; Utada, Norihumi; Oda, Taiji; Ashitaka, Hidetomo; and Ishikawa, Hideo, to Ube Industries, Ltd. Process for producing polybutadiene rubber with enhanced mechanical strength. 4,476,287, Cl. 526-92.000.

Majorette S.A.: *See*—
Ribas, Jean-Louis; and Chenavier, Gilbert, 4,475,303, Cl. 446-429.000.

Makarov, Nikolai D.: *See*—
Grigorian, Alfred N.; Kovalev, Andrei P.; Lalov, Vitaly V.; Makarov, Nikolai D.; and Katrush, Rady V., 4,476,225, Cl. 435-287.000.

Makedonski, Boris G.: *See*—
Galabov, Peter K.; and Makedonski, Boris G., 4,475,315, Cl. 51-72.00R.

Makino, Itsuo: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Makino, Itsuo; and Ishiba, Teruyuki, 4,476,133, Cl. 424-269.000.

Makino, Tomoatsu: *See*—
Toyama, Koichi; and Makino, Tomoatsu, 4,475,520, Cl. 123-618.000.

Makusij, Andrew J.: *See*—
Atkins, Terrance J.; Field, Martin J.; and Makusij, Andrew J., 4,475,516, Cl. 123-470.000.

Mallick, George T., Jr.; and Maynard, Pamela M., to Westinghouse Electric Corp. Motor control apparatus with motor starts per time period limiter. 4,476,423, Cl. 318-800.000.

Malmborg, Floyd L.; and Strengowski, Stanley S., to T-Bar Incorporated. Switching apparatus employing conductor contracts on a movable elastomeric member. 4,476,357, Cl. 200-51.090.

Mandel, Goetz, to Messerschmitt-Bolkow-Blohm GmbH. Toroidal pressure vessel of compound material. 4,475,662, Cl. 220-3.000.

Mandy, Zoltan P.: *See*—
Akerhielm, George J.; and Mandy, Zoltan P., 4,475,354, Cl. 62-117.000.

Manesty Machines Limited: *See*—
Crossley, Jack; and Wilson, David H., 4,475,880, Cl. 425-353.000.

Manfroni, Ezio. Method of pasteurizing an edible frozen congealed in machines provided with gas-compression refrigerating circuit. 4,476,146, Cl. 426-522.000.

Mantel Machine Products, Inc.: *See*—
Mantel, Robert W., 4,475,435, Cl. 86-26.000.

Mantel, Robert W., to Mantel Machine Products, Inc. In line bullet feeder. 4,475,435, Cl. 86-26.000.

Manufacture De Machines Du Haut-Rhin S.A.: *See*—
Rinck, Jean; and Lecomte, Alain, 4,475,479, Cl. 118-707.000.

Manzoni, Stephane. Remote-control device for vehicle rearview mirror. 4,475,414, Cl. 74-501.00M.

Marche, Pierre, to U.S. Philips Corp. Device for determining the spatial position of an object. 4,475,814, Cl. 356-138.000.

Marconi Company Limited, The: *See*—
Dent, Paul W., 4,476,566, Cl. 375-1.000.

Maremont Corporation: *See*—
Cubalchini, Joseph, 4,475,577, Cl. 141-349.000.
Marino, Joseph A.; Kling, Michael J.; and Roth, Sydney J., to Bear Automotive Service Equipment Company. Engine analyzer with digital waveform display. 4,476,531, Cl. 364-431.010.
Mark, Victor, to General Electric Company. Copolyester-carbonate resins. 4,476,294, Cl. 528-125.000.
Markin, Charles; Book, Ronald J.; Smith, Michael J.; and Wiacek, Marian, to Duracell Inc. Galvanic cell and sealing and insulation member therefor. 4,476,200, Cl. 429-56.000.
Marmon Group, Inc., The: *See*—
Bione, Angelo A.; and Bagus, Brian M., 4,475,430, Cl. 84-1.220.
Marneris, Michael. Protective device for instruments mounted on an instrument panel. 4,475,366, Cl. 70-258.000.
Marom, Hugo; and Adler, Shlomo, to Adler Cargo Systems Limited. Extended unit load device. 4,475,704, Cl. 248-346.000.
Marrocco, Matthew L., III: *See*—
Gagne, Robert R.; and Marrocco, Matthew L., III, 4,475,994, Cl. 204-129.000.
Marshall, John L.: *See*—
Pike, Daniel W.; Crawley, Phillip J.; Marshall, John L.; and Martin, Steve A., 4,475,570, Cl. 137-218.000.
Marshall, Keith: *See*—
Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, 4,475,919, Cl. 8-518.000.
Martin, Donald S. Hair brush with movable bristle rows. 4,475,563, Cl. 132-85.000.
Martin, Gerard, to Societe anonyme dite: Tissmetal Lionel-Dupont. Device for protecting and covering a rail for fixing the seats of a commercial aircraft. 4,475,701, Cl. 244-118.600.
Martin, Hans; and Scharpf, Kurt, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Double-tube radiator. 4,475,584, Cl. 165-76.000.
Martin, Henry, to Ciba-Geigy Corporation. Aminoglyoxyloitrile oximino carboxylic acid esters and thio esters for the protection of crops against injury by herbicides. 4,475,945, Cl. 71-105.000.
Martin Marietta Corporation: *See*—
Baker, Martin L.; and Iacovazzi, Robert A., 4,475,794, Cl. 350-288.000.
Schwartzberg, Fred R.; and Tobey, William H., 4,475,323, Cl. 52-111.000.
Martin, Steve A.: *See*—
Pike, Daniel W.; Crawley, Phillip J.; Marshall, John L.; and Martin, Steve A., 4,475,570, Cl. 137-218.000.
Martinek, Thomas W., to Teepak, Inc. Sausage casing automatic closing system. 4,475,895, Cl. 493-259.000.
Martinray Industries Ltd.: *See*—
Labelle, Henri M. R., 4,475,268, Cl. 16-355.000.
Marvel, Carl S.; and Lin, See, to United States of America, Air Force. Pseudo-p-1,1,2,2,9,9,10,10-octofluoro[2,2]-p-cyclophane bis-acid chloride. 4,476,062, Cl. 260-544.00B.
Marvin M. Stark Research Foundation: *See*—
Stark, Marvin M.; Soelberg, Kenneth B.; Pelzner, Roger B.; and Bogdan, Mark S., 4,475,370, Cl. 72-53.000.
Masaki, Keiji: *See*—
Kanamaru, Hitoshi; Amaya, Toshiyuki; Ishiguro, Kazutoyo; and Masaki, Keiji, 4,476,499, Cl. 358-342.000.
Masaki, Nobuo; and Yoshida, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Disconnect contact assembly. 4,476,361, Cl. 200-305.000.
Masatomi, Tsunehiko: *See*—
Akada, Mitsuo; Masatomi, Tsunehiko; Shimizu, Yasuo; Torii, Shigeru; and Tanaka, Hideo, 4,475,992, Cl. 204-59.00R.
Maschinenfabrik Alfred Schmermund GmbH & Co.: *See*—
Klingenberg, Uwe, 4,475,643, Cl. 198-347.000.
Masegi, Ken: *See*—
Matsumoto, Yoshihiro; Takezawa, Kunio; and Masegi, Ken, 4,476,528, Cl. 364-200.000.
Massey-Ferguson Inc.: *See*—
Stanek, Gary C., 4,475,615, Cl. 180-160.000.
Massmann, Volker: *See*—
Poetsch, Dieter; and Massmann, Volker, 4,476,493, Cl. 358-214.000.
Masteller, Sara B.; and Fujawa, Charles S., to Bendix Corporation, The. Start and shutdown sequencer for a diesel engine. 4,475,493, Cl. 123-179.00B.
Masuda, Akira: *See*—
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,475,507, Cl. 123-357.000.
Masuda, Shigeo: *See*—
Imai, Takeshi; Kako, Naohiro; Asano, Nobuyuki; Masuda, Shigeo; and Katsuda, Morihiko, 4,476,192, Cl. 428-391.000.
Masuda, Shoji: *See*—
Asaka, Urataro; Miyazawa, Shinkichi; Nakano, Teruyuki; and Masuda, Shoji, 4,475,510, Cl. 123-432.000.
Masuko, Tetsuo: *See*—
Nishino, Hiroshi; Ogino, Fumiichi; Masuko, Tetsuo; Goto, Kunio; and Takahashi, Masao, 4,476,169, Cl. 428-34.000.
Masuoka, Fujio: *See*—
Ariizumi, Syoji; Fukatsu, Yasushi; and Masuoka, Fujio, 4,475,964, Cl. 148-187.000.
Matej, Ronald J., to Litton Industrial Products, Inc. Testing and straightening machine. 4,475,371, Cl. 72-68.000.
Material Sciences Corporation: *See*—
Graziano, Frank D.; and Kuziemka, Edmund J., 4,476,264, Cl. 523-435.000.
Mathieu, Jean-Paul: *See*—
Bardy, Andre ; Comet, Michel; Coornaert, Sabine; Mathieu, Jean-Paul; Riche, Francoise; and Vidal, Michel, 4,476,106, Cl. 424-1.100.
Mathys, Georges M. K., to Exxon Research & Engineering Co. Butene dimerization method. 4,476,341, Cl. 585-512.000.
Matsuda, Fujio: *See*—
Honda, Tadatoshi; Matsuda, Fujio; Kiyoura, Tadamitsu; and Terada, Kazuhiro, 4,476,310, Cl. 548-508.000.
Matsuda, Hideki: *See*—
Hayakawa, Masatoshi; Aso, Koichi; Uedaira, Satoru; Ochiai, Yoshitaka; Matsuda, Hideki; Hotai, Kazuhide; and Hayashi, Kazuhiko, 4,475,962, Cl. 148-108.000.
Matsuda, Yukio; and Ueno, Tsutomu, to Sumitomo Metal Industries, Ltd. Method for producing clean cold strip. 4,475,369, Cl. 72-38.000.
Matsufuji, Akihiro; Umemura, Shizuo; Aonuma, Masashi; Miyatsuka, Hajime; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Ferromagnetic metal particles of iron alloyed with Ti, V, Cr, Mn, Co, Ni, Cu, Zn, Si, P, Mo, Sn, Sb and Ag coated with mono- or dialkoxysilanes. 4,475,946, Cl. 75-0.5AA.
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Sakai, Yasuharu; and Matsui, Kazuhiro, 4,475,374, Cl. 72-452.000.
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Fukatsu, Yoshiaki; Kurahashi, Takashi; Matsui, Kazuma; and Ito, Hiroki, 4,476,419, Cl. 318-444.000.
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Tanaka, Toshiaki; Kawata, Ichiro; Nakagome, Keisuke; and Matsui, Koji, 4,475,973, Cl. 156-184.000.
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Kimura, Akio; Wada, Osamu; Iohara, Kohichi; and Matsui, Michikage, 4,475,330, Cl. 57-245.000.
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Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Mizuno, Masami; Yasuda, Yasushi; and Nakata, Akira, 4,476,303, Cl. 544-223.000.
Matsui, Takehiro: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
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Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
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Yamazaki, Sho; Matsumoto, Kazutoshi; and Ochiai, Hideo, 4,475,616, Cl. 180-215.000.
Matsumoto, Kuniyoshi, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Overheat preventing system for internal combustion engines. 4,475,502, Cl. 123-331.000.
Matsumoto, Tetsurou; and Kazigaya, Kazuhiko, to Hitachi, Ltd. Dynamic type MOS memory device. 4,476,548, Cl. 365-233.000.
Matsumoto, Yoshihiro; Takezawa, Kunio; and Masegi, Ken, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling a data access in a data base management system. 4,476,528, Cl. 364-200.000.
Matsumura, Toshimi: *See*—
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,475,507, Cl. 123-357.000.
Matsumura, Tsuyoshi: *See*—
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Matsunaga, Akihiro. Process of producing peanut oil. 4,476,057, Cl. 260-412.200.
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Kasuya, Katsuhiko; Mori, Hidetomo; Fujiwara, Mitsuru; and Matsunaga, Tetsuzo, 4,475,878, Cl. 418-201.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Isaka, Takenobu; and Kobayashi Masaaki, 4,476,500, Cl. 360-10.300.
Kusunoki, Shigeru; and Yoshimura, Hirofumi, 4,476,362, Cl. 219-10.55F.
Matsushita Electric Works, Ltd.: *See*—
Hara, Hikoyoshi; Imai, Hirozo; and Iguchi, Youji, 4,475,285, Cl. 30-41.600.
Matsushita Electrical Industrial Co., Ltd.: *See*—
Katsuhiro, Takahashi; Keiichi, Watanabe; Hiroyuki, Jinbo; and Naoto, Hoshihara, 4,475,990, Cl. 204-2.100.
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Hirai, Kentaro; Matsutani, Shigeru; Makino, Itsuo; and Ishiba, Teruyuki, 4,476,133, Cl. 424-269.000.
Matsuura, Masaaki: *See*—
Honda, Shoichi; Matsuura, Masaaki; and Anno, Nobuo, 4,475,497, Cl. 123-198.00F.
Matzold, Uwe; and Heiss, Dieter, to Blaupunkt Werke GmbH. Radio transmitter system with special program identification. 4,476,577, Cl. 455-102.000.
Maurer, Richard P.: *See*—
Holtrop, James S.; and Maurer, Richard P., 4,476,183, Cl. 428-286.000.
Maxdem Incorporated: *See*—
Gagne, Robert R.; and Marrocco, Matthew L., III, 4,475,994, Cl. 204-129.000.

May, Adolf; Bucking, Hans-Walter; and Schreiber, Manfred, to Hoechst Aktiengesellschaft. Concentrated softener masterbatches. 4,476,030, Cl. 252-8.800.

Maynard, Pamela M.: *See*—
Mallick, George T., Jr.; and Maynard, Pamela M., 4,476,423, Cl. 318-800.000.

Mayr, Adolfo; Galli, Paolo; Susa, Ermanno; Di Drusco, Giovanni; and Giachetti, Ettore, to Montecatini Edison S.p.A. Catalysts for the polymerization of olefins. 4,476,289, Cl. 526-125.000.

McAloon, Kevin: *See*—
Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., 4,476,181, Cl. 428-220.000.

McCaffrey, David J. A., to Coal Industry (Patents) Limited. Froth flotation. 4,476,013, Cl. 209-166.000.

McCall, Francis L., to Specified Ceiling Systems. High volume ceiling type air diffuser. 4,475,446, Cl. 98-40.00D.

McCandlish, Larry E.; and Turaew, Larissa W., to Exxon Research and Engineering Co. Molybdenum oxycarbonitride compositions and process for preparing the same. 4,476,102, Cl. 423-365.000.

McCarroll, John J.: *See*—
Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., 4,476,250, Cl. 518-715.000.

McCorkel, Franklin M., to Aggregates Equipment, Inc. Lip vibrator unloader. 4,475,671, Cl. 222-196.000.

McCormick, Stephen J., to Allis-Chalmers Corporation. Transmission brake and clutch. 4,475,638, Cl. 192-4.00A.

McCormick, Stephen J.: *See*—
Ballendux, Gerardus M.; and McCormick, Stephen J., 4,475,641, Cl. 192-87.150.

McDonald, J. Barrett; and Fontalbert, Terry V., to Nova Rubber Co.; and FMC Corporation, a part interest. Device for collecting alkaline cell liquor from an electrolytic cell. 4,476,001, Cl. 204-228.000.

McFadden, Arthur: *See*—
Shetty, Bola V.; McFadden, Arthur; and Hofer, Peter, 4,476,311, Cl. 548-531.000.

McGloughlin, Denis: *See*—
O'Regan, Allan; and McGloughlin, Denis, 4,475,327, Cl. 52-404.000.

McGraw-Edison Company: *See*—
Wyler, Gary J., 4,475,843, Cl. 403-394.000.

McGregor, Charles W.; and Connell, James J., to Essex Group, Inc. High solids THEIC polyester enamels. 4,476,279, Cl. 524-602.000.

McGuire, Thomas R.: *See*—
Aboaf, Joseph A.; Klokholm, Erik; and McGuire, Thomas R., 4,476,454, Cl. 338-32.00R.

McIntyre, Frederic S., to Acumeter Laboratories, Inc. Method of and apparatus for multi-layer viscous fluid deposition such as for the application of adhesives and the like. 4,476,165, Cl. 427-258.000.

McKee, Gerald D., to Cars & Concepts, Inc. Drainage seal for vehicle having removable roof panels. 4,475,766, Cl. 296-213.000.

McKeefery, W. James: *See*—
Terwilliger, Curtis G.; McKeefery, W. James; Sun, Szu C.; and Melen, Roger D., 4,476,467, Cl. 340-825.500.

McKenna, Patrick M., to Boeing Company, The. Overhead panel latch. 4,475,752, Cl. 292-210.000.

McKey, Paul M., to Niagara Blower Co. Increased capacity wet surface air cooling system. 4,476,065, Cl. 261-23.00R.

McQuay Inc.: *See*—
Tsou, John L., 4,475,588, Cl. 165-159.000.

McSweeney, Michael A.: *See*—
Harden, Eldon A.; and McSweeney, Michael A., 4,475,601, Cl. 172-283.000.

Mead Corporation, The: *See*—
Adair, Paul C.; Burkholder, Amy L.; Duda, Homer G.; Wright, Richard F.; and Stanley, Mary M., 4,476,213, Cl. 430-229.000.
Ullman, John E., 4,475,653, Cl. 206-497.000.

Mead, Judith W.; Montoya, Orelio J.; Rand, Peter B.; and Willan, Vernon O., to United States of America, Energy. High temperature adhesive silicone foam composition, foam generating system and method of generating foam. 4,476,159, Cl. 427-136.000.

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Halpine, Joseph C., 4,475,377, Cl. 73-3.000.

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Fuchs, Ernst; Rimmele, Karl; and Bieri, Hans, 4,475,423, Cl. 83-199.000.

Medansky, Roland S. Automobile occupant hoist. 4,475,861, Cl. 414-462.000.

Medical Instrument Dev. Labs., Inc.: *See*—
Wang, Carl C. T., 4,475,904, Cl. 604-119.000.

Medtronic, Inc.: *See*—
Bennett, Robert M., Jr., 4,476,440, Cl. 330-260.000.

Mees, Bernhard; and Lorke, Horst, to Hoechst Aktiengesellschaft. Emulsifiers for metal processing oils. 4,476,034, Cl. 252-49.500.

Mega Engineering: *See*—
Dame, Richard E., 4,475,536, Cl. 126-419.000.

Mehesch, Hans: *See*—
Cornely, Wolfgang; Mehesch, Hans; Meyer, Frank; Kubens, Rolf; and Winkelmann, Martin, 4,475,847, Cl. 405-264.000.

Mehrens, Douglas W. Window sill flower pot support. 4,475,306, Cl. 47-39.000.

Mei, Joseph S.: *See*—
Shang, Jer-Yu; Mei, Joseph S.; and Wilson, John S., 4,475,884, Cl. 431-170.000.

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Melen, Roger D.: *See*—
Terwilliger, Curtis G.; McKeefery, W. James; Sun, Szu C.; and Melen, Roger D., 4,476,467, Cl. 340-825.500.

Mellors, Geoffrey W., to Union Carbide Corporation. Manganese dioxide and process for the production thereof. 4,476,104, Cl. 423-605.000.

Melvin, Lawrence S., Jr.: *See*—
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Menard, Claude J. Pressed cadmium electrode and method of making the same. 4,476,205, Cl. 429-217.000.

Mentor Corporation: *See*—
Conway, Anthony J.; Conway, Peter B.; and Conway, Philip J., 4,475,910, Cl. 604-352.000.

Merck & Co., Inc.: *See*—
Himmelstein, Kenneth J., 4,475,916, Cl. 604-890.000.
Kempf, August J.; Wilson, Kenneth E.; Hensens, Otto D.; Monaghan, Richard L.; Zimmerman, Sheldon B.; and Dulaney, Eugene L., 4,476,139, Cl. 424-283.000.
Portnoff, Joel B., 4,475,914, Cl. 604-414.000.

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Merkle, Frank P., 4,475,470, Cl. 110-332.000.

Merkle, Frank P., to Merkle Engineers, Inc. Suspended roof construction for industrial furnaces. 4,475,470, Cl. 110-332.000.

Mero-Raumstruktur GmbH & Co. Wurzburg: *See*—
Eberlein, Helmut, 4,475,841, Cl. 403-287.000.

Merrell, Richard G., to Zenith Electronics Corporation. Control circuit for CATV alert system. 4,476,488, Cl. 358-86.000.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Mandel, Goetz, 4,475,662, Cl. 220-3.000.

Mettler Instrumente AG: *See*—
Zulliger, Hans-Rudolf, 4,475,409, Cl. 73-862.650.

Meyborg, Holger: *See*—
Salzburg, Herbert; Meyborg, Holger; Goyert, Wilhelm; and Barnes, James M., 4,476,253, Cl. 521-176.000.

Meyer, Edmond G., to Meyer Trust. Coal derived fuel composition and method of manufacture. 4,475,924, Cl. 44-51.000.

Meyer, Frank: *See*—
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Meyer, Hans-Robert, to Ernst Winter & Sohn GmbH & Co. Method of trueing of grinding disks. 4,475,321, Cl. 51-325.000.

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Bartscher, Peter; Meyer, Harald; and Staisch, Diether, 4,475,773, Cl. 303-6.00A.

Meyer, Leonard S., to Kidde Recreation Products, Inc. Elongated spring member. 4,475,723, Cl. 267-47.000.

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Meyer, Edmond G., 4,475,924, Cl. 44-51.000.

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Meynier, Guy, to Societe Anonyme DBA. Rapid-assembly braking control unit. 4,475,337, Cl. 60-547.100.

Michaud, Horst; Raveling, Hermann; and Seeholzer, Josef, to SKW Trostberg Aktiengesellschaft. Stabilized fertilizer solutions. 4,475,939, Cl. 71-28.000.

Micheaux, Dominique: *See*—
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Michigan Standard Alloys: *See*—
Young, Harland H., 4,475,940, Cl. 71-34.000.

Micromanipulator Co., Inc., The: *See*—
Ingle, Lloyd D., 4,475,681, Cl. 228-4.500.

Mieczyslaw Mirowski: *See*—
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Mieno, Toshiyuki: *See*—
Hasegawa, Shumpei; Koumura, Takashi; Mieno, Toshiyuki; and Oikawa, Kiyoshi, 4,475,505, Cl. 123-339.000.

Miles, Frank N. Protective pad for gun holster. 4,475,675, Cl. 224-191.000.

Miles Laboratories, Inc.: *See*—
Verboom, Gilles M.; Welsh, Thomas L.; and Furgal, Henry P., 4,475,835, Cl. 401-132.000.

Militello, Jimmy. Apparatus for coiling a flexible member. 4,475,698, Cl. 242-86.000.

Millauer, Hans; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. Fluorosulfatoperfluoroalkanesulfonic acid halides. 4,476,058, Cl. 260-458.00F.

Miller, Edwin J.: *See*—
Flaim, Thomas A.; Stephens, Glen; and Miller, Edwin J., 4,475,634, Cl. 188-218.00A.

Miller, Ira; Dotson, Robert N.; and Davies, Robert B., to Motorola, Inc. High voltage bubble memory pulse generator output stage. 4,476,429, Cl. 323-299.000.

Miller, Michael J.: *See*—
Miller, Warren K.; Miller, Michael J.; and Birkner, John M., 4,476,560, Cl. 371-15.000.

Miller, Warren K.; Miller, Michael J.; and Birkner, John M., to Advanced Micro Devices, Inc.; and Monolithic Memories, Inc. Diagnostic circuit for digital systems. 4,476,560, Cl. 371-15.000.

Milligan, Orley J. Solid fuel burning stove with exterior rear wall baffle. 4,475,529, Cl. 126-77.000.

Milligan, Orley J. Solid fuel burning stove with pedestal enclosed air intake. 4,475,533, Cl. 126-279.000.
Milroy, Anthony G.; and Woof, Peter. Vehicle having pivotable wall parts. 4,476,761, Cl. 296-61.000.
Milton Roy Company: *See*—
Munk, Miner N., 4,475,813, Cl. 356-73.000.
Minami, Shunji; and Kimura, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Engine intake system for motorcycles. 4,475,617, Cl. 180-219.000.
Ministry of International Trade and Industry: *See*—
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,476,092, Cl. 422-4.000.
Minnesota Mining and Manufacturing Company: *See*—
Gasper, Alton J., 4,476,276, Cl. 524-500.000.
Hansen, Paul E.; and Nelson, Robert L., 4,476,226, Cl. 435-299.000.
Kausch, William L., 4,476,215, Cl. 430-281.000.
Packard, Thomas J., 4,475,619, Cl. 181-137.000.
Penfound, Keith A., 4,476,220, Cl. 430-569.000.
Minnesota Valley Engineering, Inc.: *See*—
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Mital, Dennis M., to Grayhill, Inc. Keyboard assembly. 4,476,355, Cl. 200-5.00A.
Mitani, Eisuke; Okamoto, Yukio; and Sumioka, Atsushi, to Hitachi, Ltd. Driving method of gas-discharge display panel. 4,476,466, Cl. 340-805.000.
Mitsubishi Chemical Industries Limited: *See*—
Wada, Keisuke, 4,476,317, Cl. 560-025.000.
Yokota, Kenji; Kusano, Hiroshi; and Sugimoto, Ryuichi, 4,476,304, Cl. 544-244.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Jo, Toshitaka; Hara, Kuniyoshi; Mizuta, Koichi; and Yamamoto, Hiroshi, 4,476,400, Cl. 307-147.000.
Komurasaki, Keiichi, 4,476,405, Cl. 310-60.00R.
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Mitsui Eng. & Shipbuilding: *See*—
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Mitsui Petrochem. Ind.: *See*—
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Takenaka, Shinji; Nishida, Takeshi; and Kanemoto, Joshiro, 4,476,335, Cl. 568-937.000.
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Sakano, Isao; Miyahara, Shiyoichiro; Yamada, Yoshitsugu; Okazaki, Yutaka; Tokuda, Hiroshi; Awaya, Akira; and Nakano, Takuo, 4,476,128, Cl. 424-250.000.
Mittelstadt, Robert F.; and Stumpf, George R., Jr., to Boeing Company, The. Method and apparatus for forming composite material articles. 4,475,976, Cl. 156-286.000.
Mitter, Mathias. Tubular stencil unit for screen printing. 4,475,455, Cl. 101-116.000.
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Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, to Nippondenso Co., Ltd. Fuel injection amount control. 4,475,507, Cl. 123-357.000.
Miyasaka, Kiyoshi, to Fujitsu Limited. DRAM with interleaved folded bit lines. 4,476,547, Cl. 365-205.000.
Miyatsuka, Hajime: *See*—
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Miyoshi, Shigeto; Hanabusa, Kanehisa; and Kagami, Toshio, to Denki Kagaku Kogyo Kabushiki Kaisha. Magnetic coating for magnetic recording media. 4,476,035, Cl. 252-62.540.
Mizuno, Chiaki; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic tape having a leader tape. 4,476,177, Cl. 428-206.000.
Mizuno, Kazuyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the idling speed of an internal combustion engine. 4,475,504, Cl. 123-339.000.
Mizuno, Masami: *See*—
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Mizuno, Saburo; Kozawa, Yutaka; and Ogata, Tosikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Heat exchanger device. 4,475,589, Cl. 165-166.000.
Mizuno, Takaji; Segawa, Hirohisa; Ueguri, Shigeo; Tabata, Yooichiro; and Hiramoto, Seigo, to Mitsubishi Denki Kabushiki Kaisha. Direct-current arc welding machine having current control for preventing arc extinction following short circuits. 4,476,376, Cl. 219-130.210.
Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See*—
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Ashcraft, Charles R., 4,476,073, Cl. 264-25.000.
Bednarczyk, Adam, 4,476,391, Cl. 250-390.000.
Bullard, Edward M.; DiBiasi, Daniel J.; and Feeney, Frank J., 4,476,077, Cl. 264-53.000.
Canterino, Peter J., 4,475,971, Cl. 156-163.000.
Chang, Clarence D.; Chu, Cynthia T. W.; Perkins, Patrick D.; and Valyocsik, Ernest W., 4,476,338, Cl. 585-322.000.
Chu, Shaw C.; and Spencer, Arthur T., 4,476,262, Cl. 523-412.000.
Fitch, John L.; and Lyle, W. D., 4,475,386, Cl. 73-151.000.
Johnston, Byron E.; and Napier, Roger P., 4,476,064, Cl. 260-976.000.
Kerr, George T.; Plank, Charles J.; and Rosinski, Edward J., 4,476,330, Cl. 568-806.000.
Ruehle, William H., 4,476,551, Cl. 367-43.000.
Mochida, Ei: *See*—
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Mochida Pharmaceutical Co., Ltd.: *See*—
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Mock, Elmar: *See*—
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Kitahara, Seiji; Mogi, Keitaro; Shimada, Thoziro; Noda, Fumio; and Tateyama, Yoshihiro, 4,476,144, Cl. 426-46.000.
Moller, Heinz: *See*—
Dammig, Werner; and Moller, Heinz, 4,475,426, Cl. 83-887.000.
Monaghan, Richard L.: *See*—
Kempf, August J.; Wilson, Kenneth E.; Hensens, Otto D.; Monaghan, Richard L.; Zimmerman, Sheldon B.; and Dulaney, Eugene L., 4,476,139, Cl. 424-283.000.
Moncrief, Jack W.: *See*—
Popovich, Robert P.; and Moncrief, Jack W., 4,475,900, Cl. 604-28.000.
Monolithic Memories, Inc.: *See*—
Miller, Warren K.; Miller, Michael J.; and Birkner, John M., 4,476,560, Cl. 371-15.000.
Monsanto Company: *See*—
Gaertner, Van R., 4,475,943, Cl. 71-86.000.
Holtrop, James S.; and Maurer, Richard P., 4,476,183, Cl. 428-286.000.
Montecatini Edison S.p.A.: *See*—
Mayr, Adolfo; Galli, Paolo; Susa, Ermanno; Di Drusco, Giovanni; and Giachetti, Ettore, 4,476,289, Cl. 526-125.000.
Montoya, Orelio J.: *See*—
Mead, Judith W.; Montoya, Orelio J.; Rand, Peter B.; and Willan, Vernon O., 4,476,159, Cl. 427-136.000.
Mookherjee, Braja D.: *See*—
Hill, Ira D.; Trenkle, Robert W.; Mookherjee, Braja D.; and Wolff, Robin K., 4,476,041, Cl. 252-522.00R.
Mooradian, Gregory C.; and Stotts, Larry B., to United States of America, Navy. Method for determining in situ the absorption coefficient of particulate media using pulsed laser technique. 4,475,816, Cl. 356-437.000.
Moore Business Forms, Inc.: *See*—
Ashby, Robert E., 4,475,747, Cl. 282-11.50A.
Morabit, M'hamed El: *See*—
Viala, Jean-Claude; Bouix, Jean; Morabit, M'hamed El; Micheaux, Dominique; and Dalibard, Gerard, 4,476,206, Cl. 429-234.000.
Morgan, Robert L. Truck bed extension attachment. 4,475,760, Cl. 296-26.000.

Morgan, Thomas J., to Deere & Company. Rotary tool and guide. 4,475,853, Cl. 409-137.000.

Mori, Hidetomo: *See*—
Kasuya, Katsuhiko; Mori, Hidetomo; Fujiwara, Mitsuru; and Matsunaga, Tetsuzo, 4,475,878, Cl. 418-201.000.

Mori, Yutaka: *See*—
Nakamura, Keiichi; Mori, Yutaka; and Inaguma, Yoshiharu, 4,476,529, Cl. 364-424.000.

Moriarty, Daniel J. Ventilating system for kitchen stove. 4,475,534, Cl. 126-299.00D.

Moriguchi, Fujio, to Fuji Xerox Co., Ltd. Stepper motor exciting circuit. 4,476,421, Cl. 318-696.000.

Moriguchi, Haruhiko; Inui, Toshiharu; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Ink donor sheet. 4,476,179, Cl. 428-216.000.

Moriguchi, Hiroyuki; Shimura, Takeo; Kaneko, Tadashi; Nomori, Hiroyuki; and Nishiwaki, Akira, to Konishiroku Photo Industry Co., Ltd. Selenium-antimony alloy electrophotographic photoreceptors. 4,476,209, Cl. 430-95.000.

Morimoto, Shigeo; Takahashi, Yoko; Watanabe, Yoshiaki; and Omura, Sadafumi, to Taisho Pharmaceutical Co., Ltd. Erythromycin A derivatives. 4,476,298, Cl. 536-7.200.

Morley, John S., to Imperial Chemical Industries PLC. Dimers of peptide amides. 4,476,117, Cl. 424-177.000.

Morse, Albert I.; and Simmonds, Robert C., Jr., to USM Corporation. Stencil apparatus. 4,475,477, Cl. 118-406.000.

Moss, David W. Bowel evacuant and method of treating constipation. 4,476,121, Cl. 424-195.000.

Moss, William H.; Popiel, Lawrence; and Scheib, Thomas J., to Babcock & Wilcox Company, The. Sootblowing optimization. 4,475,482, Cl. 122-379.000.

Motomura, Takehiko: *See*—
Ishikawa, Tokihiko; and Motomura, Takehiko, 4,475,468, Cl. 110-257.000.

Motorola, Inc.: *See*—
Allen, Gordon H., 4,476,403, Cl. 307-475.000.
Lauchner, John K., 4,476,447, Cl. 333-111.000.
Lin, Liang-Tsai, 4,476,401, Cl. 307-269.000.
Miller, Ira; Dotson, Robert N.; and Davies, Robert B., 4,476,429, Cl. 323-299.000.

Motsinger, James V., to Ramsey Engineering Company. Self-test circuit for multi-point level indicator. 4,476,460, Cl. 340-617.000.

Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, to Pierre Fabre, SA. 2'-(Orthochlorobenzoyl)-4'-chloroglycylanilides. 4,476,061, Cl. 260-501.170.

Mowbray, Dorian F., to Lucas Industries Public Limited Company. Fuel systems for compression ignition engines. 4,475,515, Cl. 123-467.000.

MTS Systems Corporation: *See*—
Lentz, Thomas P., 4,475,403, Cl. 73-798.000.

MTU Motoren-Und Turbinen Union Munchen GmbH: *See*—
Grieb, Hubert; and Klussmann, Wilfried, 4,475,586, Cl. 165-134.00R.
Huther, Werner, 4,475,494, Cl. 123-188.00A.

Mueller, Klaus: *See*—
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; Tilch, Willi; and Siol, Werner, 4,476,182, Cl. 428-265.000.

Mueller, Wolfgang, to Siemens Aktiengesellschaft. Dynamic semiconductor memory cell with random access and method for its production. 4,476,545, Cl. 365-178.000.

Muhlratzer, August; Stemmler, Bruno; and Zeilinger, Hans, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellchaft. Method for the manufacture of deformation resistant oxidic protective layers. 4,475,958, Cl. 148-6.350.

Muller, A. Bromley, to Becton, Dickinson and Company. Shunt valve and method of use. 4,475,899, Cl. 604-9.000.

Muller, Erhard; Christ, Richard; and Kroll, Hartmut, to Transnuklear GmbH. Insertion canister for radioactive material transportation and/or storage containers. 4,476,394, Cl. 250-507.100.

Muller-Frank, Ulrich; Reutler, Herbert; and Ullrich, Manfred, to GHT, Gesellschaft fuer Hochtemperaturreaktor-Technik mbH. High temperature reactor of modular construction. 4,476,089, Cl. 376-381.000.

Muller, Jacques; and Mock, Elmar, to ETA, S.A., Fabriques d'Ebauches. Electronic watch with conductor tracks formed on the watch glass. 4,475,822, Cl. 368-88.000.

Muller, Klaus: *See*—
Eckert, Konrad; Muller, Klaus; Linder, Ernst; Polach, Wilhelm; and Britsch, Heinz, 4,475,524, Cl. 123-568.000.

Muller, Siegfried; and Schulte, Harmut, to Triumph-Adler A.G. fur Buro-und Informationstechnik. Device with tension relief for the retention of a flat band cable. 4,475,785, Cl. 339-75.00P.

Mulligan, Gerard M., to Pennwalt Corporation. Dual concentric, electrically isolated, multi-function rotatable flexible shaft. 4,475,820, Cl. 366-142.000.

Mulqueen, Herbert, Jr.: *See*—
Hand, Calvin H., Jr.; Hand, David J.; and Careatti, John A., 4,475,471, Cl. 110-345.000.

Mumford, Stephen E.; and Tobery, Edward W., to Westinghouse Electric Corp. Low smoke combustor for land based combustion turbines. 4,475,344, Cl. 60-757.000.

Munk, Miner N., to Milton Roy Company. Divergent light optical systems for liquid chromatography. 4,475,813, Cl. 356-73.000.

Munoz, Roberto. Illuminated display assembly. 4,475,298, Cl. 40-546.000.

Munro, Alexander; and Entwisle, Lester, to TBA Industrial Products Limited. Method of producing glass fiber product. 4,475,693, Cl. 242-42.000.

Murai, Takaaki: *See*—
Okitsu, Kiyoshi; and Murai, Takaaki, 4,475,998, Cl. 204-159.150.

Murakami, Hiroyasu: *See*—
Katsuma, Makoto; Hiramatsu, Akira; Arakawa, Kazuhiko; and Murakami, Hiroyasu, 4,475,803, Cl. 354-481.000.

Murakami Kaimeido Co., Ltd.: *See*—
Nakayama, Kiyoshi; and Muto, Tadayoshi, 4,476,356, Cl. 200-6.00A.

Muraoka, Tsutomu: *See*—
Okumura, Takeo; and Muraoka, Tsutomu, 4,475,261, Cl. 15-195.000.

Murata Manufacturing Co., Ltd.: *See*—
Kanai, Kazuhiko; and Sakabe, Yukio, 4,475,967, Cl. 156-89.000.

Murata, Toshinori; Kuroyanagi, Tomomitsu; and Kazumi, Masafumi, to Hitachi, Ltd. Ghost reduction circuit for television receiver. 4,476,491, Cl. 358-167.000.

Muse Music Company, Limited: *See*—
Williamson, John; and Falloon, Robert, 4,475,433, Cl. 84-318.000.

Muterspaugh, Max W., to RCA Corporation. Electronic tracking for tuners. 4,476,583, Cl. 455-180.000.

Muth, Karl-Heinz, to Ernst Leitz Wetzlar GmbH. Device for linearly guiding a scanner. 4,476,492, Cl. 358-208.000.

Muto, Rudolph. Fitting for endotracheal tube apparatus and method of making the fitting. 4,475,548, Cl. 128-207.140.

Muto, Tadayoshi: *See*—
Nakayama, Kiyoshi; and Muto, Tadayoshi, 4,476,356, Cl. 200-6.00A.

Myers, Lawrence R., to Bendix Corporation, The. Tandem brake booster. 4,475,439, Cl. 91-170.00R.

Mykkanen, C. Fred, to Honeywell Inc. Line spacer. 4,476,514, Cl. 361-213.000.

Nabara, Akira: *See*—
Ono, Yoshihiro; Nabara, Akira; and Ikeda, Tomoaki, 4,476,195, Cl. 428-695.000.

Naem, Abdalla A.; Naguib, Hussein M.; Calder, Iain D.; and Boothroyd, Albert R., to Northern Telecom Limited. Stacked MOS transistor. 4,476,475, Cl. 357-23.700.

Nagami, Hayashi; Taniguchi, Yoshisada; Otsu, Shinpei; Fujimura, Toshio; and Shimizu, Keizo, to Hitachi, Ltd. Apparatus for reproducing information from a record disc. 4,476,556, Cl. 369-258.000.

Nagao, Makoto; Nahara, Akira; and Arai, Yoshihiro, to Fuji Photo Film Co., Ltd. Method of making a magnetic film target for sputtering. 4,476,000, Cl. 204-192.00M.

Nagao, Yoshiaki: *See*—
Fukuoka, Takashi; and Nagao, Yoshiaki, 4,475,487, Cl. 123-73.00V.

Nagel, Dietmar: *See*—
Kennedy, Melvin; Nagel, Dietmar; and Arad, Avi, 4,475,618, Cl. 180-237.000.

Nagel/Kennedy & Associates: *See*—
Kennedy, Melvin; Nagel, Dietmar; and Arad, Avi, 4,475,618, Cl. 180-237.000.

Naguib, Hussein M.: *See*—
Naem, Abdalla A.; Naguib, Hussein M.; Calder, Iain D.; and Boothroyd, Albert R., 4,476,475, Cl. 357-23.700.

Nagumo, Shinichi: *See*—
Nakajima, Yasuo; Nagumo, Shinichi; Hase, Yoshifumi; and Gotoh, Takaharu, 4,475,739, Cl. 277-216.000.

Nagy, Zoltan: *See*—
Blander, Milton; Wai, Chien M.; and Nagy, Zoltan, 4,475,993, Cl. 204-64.00T.

Nahara, Akira: *See*—
Nagao, Makoto; Nahara, Akira; and Arai, Yoshihiro, 4,476,000, Cl. 204-192.00M.

Naito, Kazufumi, to Kabushiki Kaisha Ishida Koki Seisakusho. Weight detection circuit for a load cell scale. 4,475,608, Cl. 177-211.000.

Nakagawa, Yasuhiko: *See*—
Furukawa, Junichi; Nakagawa, Yasuhiko; Nakai, Meroji; and Hamai, Kyugo, 4,475,492, Cl. 123-179.0BG.

Nakagome, Keisuke: *See*—
Tanaka, Toshiaki; Kawata, Ichiro; Nakagome, Keisuke; and Matsui, Koji, 4,475,973, Cl. 156-184.000.

Nakaguchi, Osamu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,476,050, Cl. 260-112.50R.

Nakai, Meroji: *See*—
Furukawa, Junichi; Nakagawa, Yasuhiko; Nakai, Meroji; and Hamai, Kyugo, 4,475,492, Cl. 123-179.0BG.

Nakajima, Yasuo; Nagumo, Shinichi; Hase, Yoshifumi; and Gotoh, Takaharu, to Nissan Motor Company, Limited. Piston ring assembly for automotive internal combustion engine. 4,475,739, Cl. 277-216.000.

Nakamori, Yutori; Matsumura, Tsuyoshi; and Kubota, Takeshi, to Mitsui Eng. & Shipbuilding; Mitsui Petrochem. Ind.; and Tokyo Shibaura Denki K.K. Microwave heated fluidized bed reactor having stages. 4,476,098, Cl. 422-140.000.

Nakamura, Hiroyuki; Kasai, Yoshiaki; and Ohgami, Masaaki, to Fuji Jukogyo Kabushiki Kaisha. Engine speed control system. 4,475,503, Cl. 123-339.000.

Nakamura, Keiichi; Mori, Yutaka; and Inaguma, Yoshiharu, to Toyoda Koki Kabushiki Kaisha. Control system for a power steering device. 4,476,529, Cl. 364-424.000.

Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Method for adjusting the humidity of gas to a constant value. 4,476,092, Cl. 422-4.000.

Nakamura, Taku: *See*—
Ogawa, Masashi; Ishigaki, Kunio; Nakamura, Taku; and Iwasaki, Nobuyuki, 4,476,218, Cl. 430-539.000.

Nakanishi, Tomohiko: *See*—
Inoguchi, Kazuhiro; Asano, Mitsuru; Okamoto, Kunio; and Nakanishi, Tomohiko, 4,476,236, Cl. 501-118.000.

Nakano, Junji: *See*—
Horie, Seiji; Nakano, Junji; and Sato, Hideo, 4,476,208, Cl. 430-58.000.

Nakano, Takuo: *See*—
Sakano, Isao; Miyahara, Shiyoichiro; Yamada, Yoshitsugu; Okazaki, Yutaka; Tokuda, Hiroshi; Awaya, Akira; and Nakano, Takuo, 4,476,128, Cl. 424-250.000.

Nakano, Teruyuki: *See*—
Asaka, Urataro; Miyazawa, Shinkichi; Nakano, Teruyuki; and Masuda, Shoji, 4,475,510, Cl. 123-432.000.
Ishii, Mineo; Arimoto, Kasei; and Nakano, Teruyuki, 4,475,259, Cl. 15-102.000.

Nakata, Akira: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Mizuno, Masami; Yasuda, Yasushi; and Nakata, Akira, 4,476,303, Cl. 544-223.000.

Nakatomi, Takayoshi; and Aoki, Keiji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for detecting pneumatic pressure in an internal combustion engine. 4,475,381, Cl. 73-115.000.

Nakayama, Kiyoshi; and Muto, Tadayoshi, to Murakami Kaimeido Co., Ltd. Multi-position electrical switch. 4,476,356, Cl. 200-6.00A.

Nakayama, Yoshio: *See*—
Tanaka, Kouji; Ikeda, Osamu; and Nakayama, Yoshio, 4,476,580, Cl. 455-164.000.

Nalepa, Christopher J., to Ethyl Corporation. Preparation of alkanediols. 4,476,332, Cl. 568-865.000.

Naoto, Hoshihara: *See*—
Katsuhiro, Takahashi; Keiichi, Watanabe; Hiroyuki, Jinbo; and Naoto, Hoshihara, 4,475,990, Cl. 204-2.100.

Napier, Roger P.: *See*—
Johnston, Byron E.; and Napier, Roger P., 4,476,064, Cl. 260-976.000.

National Research Development Corporation: *See*—
Davey, Gordon, 4,475,335, Cl. 60-520.000.
Hiles, Maurice A. F., 4,476,258, Cl. 523-212.000.

National Semiconductor Corporation: *See*—
Yu, James C.; and Patel, Suman H., 4,476,476, Cl. 357-23.130.

Naxos-Union Schleifmittel-Und Schleifmaschinenfabrik: *See*—
Russ, Peter, 4,475,318, Cl. 51-237.0CS.

NEC Corporation: *See*—
Ishii, Hideshi, 4,476,525, Cl. 364-200.000.

Nederladse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek: *See*—
Hyndman, Barry W., 4,475,554, Cl. 128-664.000.

Neef, Hans-Peter. Counterholding tool for absorbing torque while tightening screws. 4,475,419, Cl. 81-13.000.

Neier, Wilhelm; Webers, Werner; Ruckhaber, Rainer; Osterburg, Gunther; and Ostwald, Wolf J., to Deutsche Texaco Aktiengesellschaft. Process for the continuous production of secondary butyl alcohol. 4,476,333, Cl. 568-899.000.

Nejame, Samuel, Jr.: *See*—
Scott, Robert L.; Nejame, Samuel, Jr.; Jacobs, Charles S., Jr.; and Bell, Charles A., 4,476,095, Cl. 422-75.000.

Nelle, Guenther, to Dr. Johannes Heidenhain GmbH. Error correction system for position measuring device. 4,475,289, Cl. 33-125.00C.

Nelson, Eugene, to American Mobile Advertising Corp. Jitney sign. 4,475,299, Cl. 40-591.000.

Nelson, Robert L.: *See*—
Hansen, Paul E.; and Nelson, Robert L., 4,476,226, Cl. 435-299.000.

Neri, Carlo; Buonomo, Franco; and Anfossi, Bartolomeo, to Anic S.p.A. Process for the synthesis of glycol monomethylethers. 4,476,327, Cl. 568-678.000.

Nester, John: *See*—
Cammann, Fred W.; Nester, John; and Roach, Jere H., 4,476,368, Cl. 219-69.00V.

Nestler, Gerhard: *See*—
Merger, Franz; and Nestler, Gerhard, 4,476,316, Cl. 560-024.000.

Netherwood, Shelley; Blackwell, Bernie; and Piccolo, Dominick, to Warner-Lambert Company. Peppermint oil flavored compositions. 4,476,142, Cl. 426-3.000.

Nette, Aart; and Kruyt, Jacob A., to Hollandsche Beton Groep N.V. Method of placing a web. 4,475,846, Cl. 405-17.000.

Neumann, Peter; and Bormann, Gerhard, to Sanuoz Ltd. Amino-2,1,3-beazothiadiazole and -benzoxadiazole derivatives, their preparation and pharmaceutical compositions containing them. 4,476,135, Cl. 424-270.000.

Neuzil, Richard W.: *See*—
Kulprathipanja, Santi; Neuzil, Richard W.; and Landis, Arthur M., 4,475,954, Cl. 127-46.300.

Nevitt, Thomas D.: *See*—
Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., 4,476,011, Cl. 208-111.000.

Newman, Garry F.: *See*—
Heiskell, Ronald E.; Kirkpatrick, Gregg R.; Newman, Garry F.; and Stewart, James D., 4,475,714, Cl. 254-89.00H.

Newman, James A.: *See*—
L'Abbe, Richard; St. Laurent, Andre M.; Newman, James A.; and Gallup, Brian M., 4,475,248, Cl. 2-2.500.

Ng, Henry H.; and Hatvany, Bela R., to Interaction Systems, Inc. Display device having unpatterned touch detection. 4,476,463, Cl. 340-712.000.

NGK Insulators, Ltd.: *See*—
Okamoto, Magoji; and Okamoto, Norio, 4,475,860, Cl. 414-416.000.

Niagara Blower Co.: *See*—
McKey, Paul M., 4,476,065, Cl. 261-23.00R.

Nickel, Friedhelm: *See*—
Koerner, Gotz; Nickel, Friedhelm; Rott, Hans; and Schmidt, Gunter, 4,476,282, Cl. 524-837.000.

Nidle, Charles, to Eaton Corporation. Tire valve assembly. 4,475,578, Cl. 152-415.000.

Nielsen, Kurt F.: *See*—
Jensen, Niels D.; and Nielsen, Kurt F., 4,475,873, Cl. 417-422.000.

Nielsen, Leif: *See*—
Huelle, Zbigniew R.; Nielsen, Leif; and Jakobsen, Jakob S., 4,475,686, Cl. 236-68.00C.

Niemann, Gerhard, to Volkswagenwerk AG. Elastic support for helical springs. 4,475,725, Cl. 267-179.000.

Niemi, Randolph G., to Dow Corning Corporation. High voltage insulators. 4,476,155, Cl. 427-58.000.

Nihon Dempa Kogyo Co., Ltd.: *See*—
Okazaki, Masanobu; Akutsu, Satoshi; and Ebihara, Susumu, 4,476,411, Cl. 310-361.000.

Nihon Tokushu Noyaku Seizo K.K.: *See*—
Saito, Junichi; and Kume, Toyohiko, 4,475,997, Cl. 204-158.00R.

Nippon Electric Co., Ltd.: *See*—
Fuse, Mamoru, 4,476,480, Cl. 357-44.000.
Kaneko, Takashi; and Shoji, Masashi, 4,476,427, Cl. 323-234.000.
Sato, Ikuro; Tamagawa, Susumu; and Iwata, Ryuichi, 4,476,471, Cl. 343-779.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Iwamatsu, Masayuki, 4,476,442, Cl. 330-265.000.

Nippon Kogaku K.K.: *See*—
Fukuhara, Toru; and Saegusa, Takashi, 4,476,383, Cl. 250-214.00P.
Kodama, Hiroyuki, 4,476,233, Cl. 501-46.000.
Onogi, Kenji, 4,475,802, Cl. 354-456.000.
Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, 4,475,801, Cl. 354-419.000.

Nippon Piston Ring Co., Ltd.: *See*—
Sugahara, Eisuke, 4,475,496, Cl. 123-198.00F.

Nippon Soda Company Limited: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Mizuno, Masami; Yasuda, Yasushi; and Nakata, Akira, 4,476,303, Cl. 544-223.000.

Nippon Soken, Inc.: *See*—
Inoguchi, Kazuhiro; Asano, Mitsuru; Okamoto, Kunio; and Nakanishi, Tomohiko, 4,476,236, Cl. 501-118.000.
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, 4,475,388, Cl. 73-204.000.
Nishida, Minoru; Hattori, Tadashi; and Yanagisawa, Takanori, 4,476,412, Cl. 313-130.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Tanaka, Chihaya; Iwabuchi, Kazuo; Kakii, Toshiaki; and Toda, Yuichi, 4,475,935, Cl. 65-3.410.

Nippondenso Co., Ltd.: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,476,532, Cl. 364-431.050.
Fukatsu, Yoshiaki; Kurahashi, Takashi; Matsui, Kazuma; and Ito, Hiroki, 4,476,419, Cl. 318-444.000.
Kato, Katsushi; Isomura, Shigenori; Kobayashi, Akio; and Kondo, Toshio, 4,475,501, Cl. 123-325.000.
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,475,507, Cl. 123-357.000.
Nishida, Minoru; Hattori, Tadashi; and Yanagisawa, Takanori, 4,476,412, Cl. 313-130.000.
Sakakibara, Yoshiyasu; and Fukumura, Keiichi, 4,475,485, Cl. 123-41.050.
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Shibata, Masahiro; Saito, Toshitaka; and Yamakawa, Mitihiro, 4,476,008, Cl. 204-425.000.
Toyama, Koichi; and Makino, Tomoatsu, 4,475,520, Cl. 123-618.000.

Nishida, Minoru; Hattori, Tadashi; and Yanagisawa, Takanori, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Spark plug. 4,476,412, Cl. 313-130.000.

Nishida, Takeshi: *See*—
Takenaka, Shinji; Nishida, Takeshi; and Kanemoto, Joshiro, 4,476,335, Cl. 568-937.000.

Nishikawa, Tatsuo, to Canon Kabushiki Kaisha. Small printer. 4,475,828, Cl. 400-146.000.

Nishimura, Kyoshin, to Clarion Co., Ltd. Coupler. 4,475,751, Cl. 285-131.000.

Nishimura, Yoshio: *See*—
Takeuchi, Hiroshi; and Nishimura, Yoshio, 4,475,640, Cl. 192-70.170.

Nishi..o, Hiroshi; Ogino, Fumiichi; Masuko, Tetsuo; Goto, Kunio; and Takahashi, Masao, to Takeda Chemical Industries, Ltd.; and Mizusawa Kagaku Kogyo Kabushiki Kaisha. Multilayer glass structure. 4,476,169, Cl. 428-34.000.

Nishiwaki, Akira: *See*—
Moriguchi, Hiroyuki; Shimura, Takeo; Kaneko, Tadashi; Nomori, Hiroyuki; and Nishiwaki, Akira, 4,476,209, Cl. 430-95.000.

Nissan Motor Company, Limited: *See—*
Akiyama, Yoshinori, 4,475,746, Cl. 280-808.000.
Fukae, Yasuo, 4,475,525, Cl. 123-568.000.
Furukawa, Junichi; Nakagawa, Yasuhiko; Nakai, Meroji; and Hamai, Kyugo, 4,475,492, Cl. 123-179.0BG.
Higuchi, Megumu, 4,475,413, Cl. 74-422.000.
Iwata, Kazuroh; Fukuhsima, Naoto; and Hidaka, Kunihiko, 4,475,635, Cl. 188-282.000.
Nakajima, Yasuo; Nagumo, Shinichi; Hase, Yoshifumi; and Gotoh, Takaharu, 4,475,739, Cl. 277-216.000.
Okada, Makoto, 4,475,508, Cl. 123-425.000.
Tsumaki, Masahiro; Fujii, Toshihiko; Kamiya, Hideaki; Suzuki, Haruo; and Goto, Yoshihiro, 4,475,462, Cl. 105-149.000.
Nitoh, Shoichi: *See—*
Kuriyama, Yasuhisa; Kakuda, Minoru; and Nitoh, Shoichi, 4,476,314, Cl. 549-531.000.
Nitschke, John S., to Glasstech, Inc. Conveyor controller for glass sheet processing equipment. 4,475,937, Cl. 65-163.000.
Nitto Electric Industrial Company, Ltd.: *See—*
Tanaka, Toshiaki; Kawata, Ichiro; Nakagome, Keisuke; and Matsui, Koji, 4,475,973, Cl. 156-184.000.
Nixon, Ralph D., to English Electric Valve Company Limited. Display arrangements. 4,475,791, Cl. 350-127.000.
NL Industries, Inc.: *See—*
Finlayson, Claude M., 4,475,950, Cl. 106-20.000.
House, Roy F.; and Hoover, Lonnie D., 4,476,032, Cl. 252-8.55R.
Noda, Fumio: *See—*
Kitahara, Seiji; Mogi, Keitaro; Shimada, Thoziro; Noda, Fumio; and Tateyama, Yoshihiro, 4,476,144, Cl. 426-46.000.
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor read only memory and method of making the same. 4,476,478, Cl. 357-41.000.
Nomori, Hiroyuki: *See—*
Moriguchi, Hiroyuki; Shimura, Takeo; Kaneko, Tadashi; Nomori, Hiroyuki; and Nishiwaki, Akira, 4,476,209, Cl. 430-95.000.
Nomura, Masami, to Mitsubishi Denki Kabushiki Kaisha. AC Elevator control system. 4,475,631, Cl. 187-29.00R.
Nordgren, Hans-Elov. Spacer for loading pallets. 4,475,703, Cl. 248-188.100.
Norlin Industries, Inc.: *See—*
Starkey, David T., 4,475,427, Cl. 84-1.010.
Northern Telecom Limited: *See—*
Arnon, Ephraim, 4,476,558, Cl. 370-100.000.
Naem, Abdalla A.; Naguib, Hussein M.; Calder, Iain D.; and Boothroyd, Albert R., 4,476,475, Cl. 357-23.700.
Norton Company: *See—*
Foster, Bryan D.; and Stapleton, Del G., 4,475,887, Cl. 432-258.000.
Hickory, Gordon E., 4,475,926, Cl. 51-298.000.
Jones, Cecil M.; Washburn, Malcolm E.; and Trostel, Louis J., Jr., 4,476,234, Cl. 501-89.000.
Norton, Patrick H., to Chemical Handling Equipment Co., Inc. Air logic controller and metering pump unit for an apparatus for transferring, pumping and metering liquid chemicals. 4,475,665, Cl. 222-14.000.
Norwood Marking & Equipment Co., Inc.: *See—*
Davison, Charles F., 4,475,457, Cl. 101-228.000.
Nova Rubber Co.: *See—*
McDonald, J. Barrett; and Fontalbert, Terry V., 4,476,001, Cl. 204-228.000.
Novo Industri A/S: *See—*
Brange, Jens J. V.; and Havelund, Svend, 4,476,118, Cl. 424-178.000.
NOW Industries, Inc.: *See—*
Davis, Lincoln R., 4,475,951, Cl. 106-74.000.
Nowicki, Roman M.: *See—*
Kovacs, Bela V.; Nowicki, Roman M.; and Stickels, Charles A., 4,475,956, Cl. 148-3.000.
Nowisch, Heinz K.; and Alguire, Richard O., to Black Clawson Company, The. Pellet dryer. 4,476,019, Cl. 210-232.000.
Nuclear Power Company Limited: *See—*
Barnes, John G., 4,476,088, Cl. 376-347.000.
Numrich, Susan K.: *See—*
Dragonette, Louis R.; Frank, Laurence J.; and Numrich, Susan K., 4,476,549, Cl. 367-13.000.
Ochiai, Hideo: *See—*
Yamazaki, Sho; Matsumoto, Kazutoshi; and Ochiai, Hideo, 4,475,616, Cl. 180-215.000.
Ochiai, Hiromichi. Method of drying and shaping clothing and body-shaped bag used therefor. 4,475,673, Cl. 223-70.000.
Ochiai, Yoshitaka: *See—*
Hayakawa, Masatoshi; Aso, Koichi; Uedaira, Satoru; Ochiai, Yoshitaka; Matsuda, Hideki; Hotai, Kazuhide; and Hayashi, Kazuhiko, 4,475,962, Cl. 148-108.000.
Oda, Kazutaka: *See—*
Ohba, Hisao; Oda, Kazutaka; Sakaki, Hirokazu; Shirai, Akira; and Ohashi, Azusa, 4,476,006, Cl. 204-17.000.
Oda, Mitsuyuki: *See—*
Takeda, Hiroyuki; Kudo, Kunio; Kobayashi, Izumi; Ojiri, Yohsuke; Oda, Mitsuyuki; and Sugiyama, Sakae, 4,475,394, Cl. 73-598.000.
Oda, Taiji: *See—*
Maehara, Nobunori; Utada, Norihumi; Oda, Taiji; Ashitaka, Hidetomo; and Ishikawa, Hideo, 4,476,287, Cl. 526-92.000.
Odaka, Kentaro: *See—*
Sako, Yoichiro; and Odaka, Kentaro, 4,476,562, Cl. 371-39.000.
Odashima, Rou, to Yamama Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Lubricating system for an outboard motor. 4,475,488, Cl. 123-73.0AD.
Odill, Frank J.; and Anderson, David E., to Cretex Companies, Inc., The. External manhole chimney seal. 4,475,845, Cl. 404-25.000.
Odom, Horace L.: *See—*
Thatcher, Richard E.; Odom, Horace L.; and Edwards, Ronald L., 4,475,562, Cl. 131-110.000.
Oess, Hans-Dieter: *See—*
Dietzsch, Kurt; Oess, Hans-Dieter; Kniele, Wolfgang; Zander, Joachim; and Jeske, Gustav, 4,475,445, Cl. 98-2.050.
Ogan, Kenneth L.: *See—*
Katz, Elena; Ogan, Kenneth L.; and Scott, Raymond P. W., 4,476,026, Cl. 210-656.000.
Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Miniature type tape cassette. 4,476,505, Cl. 360-94.000.
Ogata, Tosikazu: *See—*
Mizuno, Saburo; Kozawa, Yutaka; and Ogata, Tosikazu, 4,475,589, Cl. 165-166.000.
Ogawa, Katsumi: *See—*
Kawakami, Shigezo; Omura, Hiroshi; and Ogawa, Katsumi, 4,475,668, Cl. 222-52.000.
Ogawa, Kimio: *See—*
Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, 4,476,505, Cl. 360-94.000.
Ogawa, Masashi; Ishigaki, Kunio; Nakamura, Taku; and Iwasaki, Nobuyuki, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,476,218, Cl. 430-539.000.
Ogawa, Tsutomu, to Fujitsu Limited. Process for selective cutting of electrical conductive layer by irradiation of energy beam. 4,476,375, Cl. 219-121.0LN.
Ogino, Fumiichi: *See—*
Nishino, Hiroshi; Ogino, Fumiichi; Masuko, Tetsuo; Goto, Kunio; and Takahashi, Masao, 4,476,169, Cl. 428-34.000.
Ogino, Isao: *See—*
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,476,092, Cl. 422-4.000.
Ogiso, Haruhiko: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,476,532, Cl. 364-431.050.
Ogo, Yoshimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. X-Ray field defining mask. 4,476,569, Cl. 378-175.000.
Oguma, Tomio; Hirosawa, Kouichiro; and Mitsui, Tsutomu, to Aishin Seiki Kabushikikaisha. Automatic clutch control system. 4,475,637, Cl. 192-0.052.
Oguni, Kensaku: *See—*
Suefuji, Kazutaka; Oguni, Kensaku; Kotani, Sumihisa; and Tojo, Kenji, 4,475,360, Cl. 62-324.100.
Oh, Indong. Acetabular cup positioner and method. 4,475,549, Cl. 128-303.00R.
O'Hara, Mark J.; and Imai, Tamotsu, to UOP Inc. Preparation of highly branched chain oligomers. 4,476,342, Cl. 585-514.000.
Ohashi, Azusa: *See—*
Ohba, Hisao; Oda, Kazutaka; Sakaki, Hirokazu; Shirai, Akira; and Ohashi, Azusa, 4,476,006, Cl. 204-17.000.
Ohba, Hisao; Oda, Kazutaka; Sakaki, Hirokazu; Shirai, Akira; and Ohashi, Azusa, to Fuji Photo Film Co., Ltd. Supports for lithographic printing plates and process for producing the same. 4,476,006, Cl. 204-17.000.
Ohgami, Masaaki: *See—*
Nakamura, Hiroyuki; Kasai, Yoshiaki; and Ohgami, Masaaki, 4,475,503, Cl. 123-339.000.
Ohki, Hiroshi: *See—*
Joichi, Yoshiro; and Ohki, Hiroshi, 4,476,555, Cl. 369-44.000.
Ohkubo, Takaaki: *See—*
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
Ohlmann, Robert C.: *See—*
Pohle, Richard H.; and Ohlmann, Robert C., 4,476,161, Cl. 427-162.000.
Ohmori, Takashi: *See—*
Moriguchi, Haruhiko; Inui, Toshiharu; and Ohmori, Takashi, 4,476,179, Cl. 428-216.000.
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, to Mochida Pharmaceutical Co., Ltd. 7-Diethylamino-5-methylthiazolo[5,4-d]pyrimidine and pharmaceutical composition containing same. 4,476,127, Cl. 424-250.000.
Ohoka, Susumu: *See—*
Maeda, Tetsuro; Ohoka, Susumu; Shingai, Masafumi; and Igawa, Haruo, 4,476,266, Cl. 524-128.000.
Ohshima, Takeo; and Ohtani, Shigeki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for modifying regenerated cellulose fiber. 4,475,917, Cl. 8-127.000.
Ohta, Norio: *See—*
Imura, Ryo; Ikeda, Tadashi; Ohta, Norio; Takeuchi, Teruaki; and Sugita, Yutaka, 4,476,152, Cl. 427-38.000.
Ohtani, Mikio; Wada, Hiroshi; and Kosaka, Yuzo, to Eiken Kagaku Kabushiki Kaisha. Test piece for quantitative analysis of substances in body fluids. 4,476,222, Cl. 435-14.000.
Ohtani, Shigeki: *See—*
Ohshima, Takeo; and Ohtani, Shigeki, 4,475,917, Cl. 8-127.000.

Oikawa, Kiyoshi: *See*—
Hasegawa, Shumpei; Koumura, Takashi; Mieno, Toshiyuki; and Oikawa, Kiyoshi, 4,475,505, Cl. 123-339.000.

Ojiri, Yohsuke: *See*—
Takeda, Hiroyuki; Kudo, Kunio; Kobayashi, Izumi; Ojiri, Yohsuke; Oda, Mitsuyuki; and Sugiyama, Sakae, 4,475,394, Cl. 73-598.000.

Oka, Masahiko: *See*—
Yoshida, Masahiro; and Oka, Masahiko, 4,476,399, Cl. 307-44.000.

Okabe, Sigeru: *See*—
Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Tobita, Hiroshi; and Tonami, Munehiko, 4,476,199, Cl. 429-34.000.

Okada, Hideo: *See*—
Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Tobita, Hiroshi; and Tonami, Munehiko, 4,476,199, Cl. 429-34.000.

Okada, Makoto, to Nissan Motor Company, Limited. Automotive engine cylinder block. 4,475,508, Cl. 123-425.000.

Okada, Satoshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeso, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,476,050, Cl. 260-112.50R.

Okajima, Masakazu: *See*—
Kouno, Shigeyoshi; and Okajima, Masakazu, 4,475,424, Cl. 83-549.000.

Okamoto, Kunio: *See*—
Inoguchi, Kazuhiro; Asano, Mitsuru; Okamoto, Kunio; and Nakanishi, Tomohiko, 4,476,236, Cl. 501-118.000.

Okamoto, Magoji; and Okamoto, Norio, to NGK Insulators, Ltd. Apparatus for discharging radioactive waste from its container. 4,475,860, Cl. 414-416.000.

Okamoto, Norio: *See*—
Okamoto, Magoji; and Okamoto, Norio, 4,475,860, Cl. 414-416.000.

Okamoto, Yukio: *See*—
Mitani, Eisuke; Okamoto, Yukio; and Sumioka, Atsushi, 4,476,466, Cl. 340-805.000.

Okazaki, Masanobu; Akutsu, Satoshi; and Ebihara, Susumu, to Nihon Dempa Kogyo Co., Ltd. Rectangular thickness shear quartz crystal oscillator. 4,476,411, Cl. 310-361.000.

Okazaki, Yutaka: *See*—
Sakano, Isao; Miyahara, Shiyoichiro; Yamada, Yoshitsugu; Okazaki, Yutaka; Tokuda, Hiroshi; Awaya, Akira; and Nakano, Takuo, 4,476,128, Cl. 424-250.000.

Oken Seiko Co., Ltd.: *See*—
Fukami, Tadashi, 4,476,409, Cl. 310-198.000.

Okino, Kiyomi: *See*—
Hamatani, Teruo; and Okino, Kiyomi, 4,475,763, Cl. 296-65.00R.

Okitsu, Kiyoshi; and Murai, Takaaki, to Daicel Chemical Industries, Ltd. Modified epoxy (meth) acrylate resin and hardenable resin composition containing the same. 4,475,998, Cl. 204-159.150.

Oku, Naohiro: *See*—
Aiba, Masahiko; and Oku, Naohiro, 4,476,472, Cl. 346-75.000.

Okui, Haruki: *See*—
Anno, Nobuo; Okui, Haruki; Yamamoto, Kuniyuki; and Miyazaki, Kunio, 4,475,893, Cl. 474-13.000.

Okumura, Takeo; and Muraoka, Tsutomu, to Kao Corporation. Hairbrush. 4,475,261, Cl. 15-195.000.

Olen, Donald S., to Allis-Chalmers Corporation. Oil purge system for cold weather shutdown of oil flooded screw compressor. 4,475,876, Cl. 418-84.000.

O'Lenick, Anthony J., to Henkel Corporation. Surfactant product. 4,476,043, Cl. 252-544.000.

O'Lenick, Anthony J., to Henkel Corporation. Surfactant product. 4,476,044, Cl. 252-545.000.

O'Lenick, Anthony J., to Henkel Corporation. Surfactant. 4,476,045, Cl. 252-545.000.

Olin Corporation: *See*—
Cianciolo, Alfred D.; and Lines, Ellwood L., Jr., 4,476,251, Cl. 521-110.000.
Clarke, Oliver L., III; and Orrill, William E., 4,475,734, Cl. 273-410.000.

Oliver, H. LeRoy, to H & H Oliver Corporation. Rivetless anchor nut and method. 4,475,859, Cl. 411-361.000.

Olsen, Arthur A.: *See*—
Daudt, Stephen W.; Gleason, George W.; Hermanson, William C.; and Olsen, Arthur A., 4,476,533, Cl. 364-473.000.

Olson, David H., to Tektronix, Inc. Waveform measurement system. 4,476,432, Cl. 324-121.00R.

Olson, Harry W.; and Borzoni, John M., to Littelfuse, Inc. Combination fuse puller and fuse condition indicator. 4,475,283, Cl. 29-720.000.

Olympus Optical Co., Ltd.: *See*—
Hayamizu, Toshinada, 4,476,519, Cl. 362-32.000.
Iwasawa, Teruo; and Tojiki, Hitomi, 4,476,428, Cl. 323-314.000.
Kimura, Tadashi, 4,475,796, Cl. 350-525.000.
Konomura, Yutaka, 4,475,539, Cl. 128-6.000.
Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,475,540, Cl. 128-6.000.
Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,475,541, Cl. 128-6.000.

Omi, Kyoji, to Ricoh Company, Ltd. Electrophotographic copying apparatus. 4,475,805, Cl. 355-8.000.

Omura, Hiroshi: *See*—
Kawakami, Shigezo; Omura, Hiroshi; and Ogawa, Katsumi, 4,475,668, Cl. 222-52.000.

Omura, Sadafumi: *See*—
Morimoto, Shigeo; Takahashi, Yoko; Watsnabe, Yoshiaki; and Omura, Sadafumi, 4,476,298, Cl. 536-7.200.

Onaya, Mamoru; Chiba, Hitoshi; and Hosokawa, Toshihiro, to Tsubakimoto Chain Company. Corrosion resistant shaft and boss clamping device. 4,475,842, Cl. 403-370.000.

O'Neil, Elbridge A., Jr.: *See*—
Verbicky, John W., Jr.; and O'Neil, Elbridge A., Jr., 4,476,309, Cl. 548-480.000.

O'Neil, Eugene J., to Dataproducts Corporation. Multi-colored printing ribbon ink barrier system. 4,476,176, Cl. 428-195.000.

Onishi, Yasunobu: *See*—
Hayase, Shuzi; and Onishi, Yasunobu, 4,476,290, Cl. 528-13.000.

Ono, Yoshihiro; Nabara, Akira; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium and process for the production thereof. 4,476,195, Cl. 428-695.000.

Onogi, Kenji, to Nippon Kogaku K.K. Apparatus for determining shutter speed adapted for a photographing apparatus in a microscope. 4,475,802, Cl. 354-456.000.

Ontario Research Foundation: *See*—
Wong, Edward W. C., 4,475,972, Cl. 156-167.000.

Ooms, Julius, to Procter & Gamble Company, The. Textile treatment compositions. 4,476,031, Cl. 252-8.800.

Oonaka, Hidemi, to Toyota Jidosha Kabushiki Kaisha. Fuel evaporation gas treating device. 4,475,522, Cl. 123-520.000.

Oono, Katsuyasu; and Kaji, Gozo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic valve lifter. 4,475,490, Cl. 123-90.520.

Ootsuka, Tetsuo, to Casio Computer Co., Ltd. Data processing apparatus with combined voice sound reproducing device and visual display. 4,476,570, Cl. 381-51.000.

O'Regan, Allan; and McGloughlin, Denis, to Soldek Limited. Roof system. 4,475,327, Cl. 52-404.000.

Ori, Peter; and Kreider, Carleen, to Seachem & Seaquist Valve Company. Aerosol assembly for signalling depletion of a preselected amount of the container contents when in an inverted position. 4,475,667, Cl. 222-39.000.

Oriental Metal MFG. Co., LTD.: *See*—
Tsumura, Kenji; and Yamashita, Masayuki, 4,475,988, Cl. 202-174.000.

Orion-yhtyma Oy: *See*—
Pekkanen, Timo J., 4,476,114, Cl. 424-164.000.

Orlandes, Nicolae V.; Huang, Ray C.; Romig, Bernard E.; and Wiley, Jack C., to Deere & Company. Bulldozer track support roller arrangement. 4,475,775, Cl. 305-28.000.

Orndoff, Robert R.: *See*—
Chang, Marguerite S.; and Orndoff, Robert R., 4,476,322, Cl. 564-109.000.

Orrill, William E.: *See*—
Clarke, Oliver L., III; and Orrill, William E., 4,475,734, Cl. 273-410.000.

Oshikoshi, Yuji; and Agano, Toshitaka, to Fuji Photo Film Co., Ltd. Image scanning and recording method. 4,476,497, Cl. 358-298.000.

Osifchin, Nicholas: *See*—
Grimado, Philip B.; Holt, Vernon E.; and Osifchin, Nicholas, 4,475,685, Cl. 236-46.00R.

Osterburg, Gunther: *See*—
Neier, Wilhelm; Webers, Werner; Ruckhaber, Rainer; Osterburg, Gunther; and Ostwald, Wolf J., 4,476,333, Cl. 568-899.000.

Ostlinning, Gunter; Roever, Otto A.; Wintzen, Gunther; and Zilges, Franz J., to SMS Schloemann Siemag Aktiengesellschaft. Method and means for removing a die, sealing member and residual metal from an indirect extrusion press. 4,475,372, Cl. 72-255.000.

Ostwald, Wolf J.: *See*—
Neier, Wilhelm; Webers, Werner; Ruckhaber, Rainer; Osterburg, Gunther; and Ostwald, Wolf J., 4,476,333, Cl. 568-899.000.

Ota, Yoshihiko: *See*—
Hirota, Akira; and Ota, Yoshihiko, 4,476,501, Cl. 360-19.100.

Otani, Tadashi: *See*—
Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, 4,475,801, Cl. 354-419.000.

Otsu, Shinpei: *See*—
Nagami, Hayashi; Taniguchi, Yoshisada; Otsu, Shinpei; Fujimura, Toshio; and Shimizu, Keizo, 4,476,556, Cl. 369-258.000.

Otsubo, Yoshiaki; Wakabayashi, Hiroshi; and Otani, Tadashi, to Nippon Kogaku K.K. Flashlight photography preparing device of a camera. 4,475,801, Cl. 354-419.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See*—
Akada, Mitsuo; Masatomi, Tsunehiko; Shimizu, Yasuo; Torii, Shigeru; and Tanaka, Hideo, 4,475,992, Cl. 204-59.00R.

Ottersbach, Thomas V.: *See*—
Hildebrandt, Eugene F.; and Ottersbach, Thomas V., 4,476,407, Cl. 310-71.000.

Outokumpu Oy: *See*—
Andersson, Bengt T., 4,475,947, Cl. 75-92.000.

Owens-Illinois, Inc.: *See*—
Bailey, William J.; and Taylor, Lynn J., 4,476,255, Cl. 523-125.000.
Jabarin, Saleh A., 4,476,170, Cl. 428-35.000.

Owens, Phillip M., to SCM Corporation. Adhesion promoters for sanitary can coatings. 4,476,263, Cl. 523-426.000.

Owyang, King: *See*—
Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, 4,475,280, Cl. 29-577.00C.

Ozawa, Kunitaka: *See*—
Ayata, Naoki; Koumura, Noboru; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Kazuma, Koji, 4,476,486, Cl. 358-78.000.

Pabst, Horst: *See*—
Brinkmann, Hans; and Pabst, Horst, 4,476,075, Cl. 264-40.700.

Pachovsky, Roman A., to Texaco Canada Inc. In situ recovery process for heavy oil sands. 4,475,592, Cl. 166-272.000.

Packard, Thomas J., to Minnesota Mining and Manufacturing Company. Stethoscope with floating diaphragm. 4,475,619, Cl. 181-137.000.

Paffrath, Gottfried: *See*—
Ambros, Rainer; Brenner, Norbert; Fischer, Jurgen; Paffrath, Gottfried; and Schroeder, Henrich J., 4,476,048, Cl. 252-632.000.

Pagel, Roy E.: *See*—
Corpron, Gary P.; and Pagel, Roy E., 4,475,405, Cl. 73-861.240.

Palermo, John J.: *See*—
Frank, Carl A., 4,475,364, Cl. 70-139.000.

Palmer, Burton J.; and Posluszny, Joseph V., to Halcon SD Group, Inc., The. The separation of tars from carbonylation reaction mixtures. 4,476,238, Cl. 502-31.000.

Pamart, Joel, to Pont-A-Mousson S.A. Induction heated casting channel with graphite sleeve. 4,475,721, Cl. 266-236.000.

Panicucci, Ermanno, to A.P.I. Applicazioni Poliuretaniche Industriali S.p.A. Process and tooling for production of open top shoes with resin moulded bottom, and shoes manufactured in that manner. 4,475,258, Cl. 12-142.0RS.

Pannier, Gerard; and Roumy, Jean C., to Regie Nationale des Usines Renault. Microcomputer electronic control system for automatic transmission of motor vehicle. 4,476,530, Cl. 364-424.100.

Paoletti, Peitro: *See*—
Amara, Louis J.; Paoletti, Peitro; and Tavana, Benito J., 4,475,952, Cl. 106-94.000.

Papst, Wolfgang A. Well stimulation system. 4,475,596, Cl. 166-303.000.

Pargamin, Laurent: *See*—
Kaczerginski, Alexandre; and Pargamin, Laurent, 4,476,081, Cl. 264-262.000.

Parise and Sons, Inc.: *See*—
Schulz, Rainer R., 4,475,264, Cl. 15-300.00A.

Park, Elizabeth Y.: *See*—
Crabtree, David J.; and Park, Elizabeth Y., 4,476,285, Cl. 525-113.000.

Park-Ohio Industries, Inc.: *See*—
Strandberg, Donald G., 4,475,839, Cl. 403-2.000.

Park, Yong S., to Zenith Electronics Corporation. Color cathode ray tube screening exposure method and apparatus. 4,475,797, Cl. 354-1.000.

Parker, David A.: *See*—
Hutchinson, Mark R.; and Parker, David A., 4,475,764, Cl. 296-136.000.

Parkes, Gregory E.: *See*—
Ziolkowski, Antoni M.; Hatton, Leslie; Parkes, Gregory E.; and Haugland, Tor-Arvid, 4,476,553, Cl. 367-144.000.

Parmelee, G. Kendall: *See*—
Frank, Carl A., 4,475,364, Cl. 70-139.000.

Parselle, John L. B.: *See*—
Heise, Stanley R.; Blackston, Michael D.; Zekich, Michael B.; and Parselle, John L. B., 4,475,308, Cl. 49-42.000.

Patacca, Angelo M.; and Premont, Emile J., to United Technologies Corporation. Containment structure. 4,475,864, Cl. 415-9.000.

Patel, Suman H.: *See*—
Yu, James C.; and Patel, Suman H., 4,476,476, Cl. 357-23.130.

Patel, Vipin N., to Harris Corporation. Method for forming integrated circuits bearing polysilicon of reduced resistance. 4,475,955, Cl. 148-1.500.

Paterson Candy International Limited: *See*—
Cheetham, John H., 4,476,020, Cl. 210-289.000.

Paton, H. Neil; Skilling, John B.; Sandys, Jeffery P.; and Gylland, E. Frederick, Jr., to Paton, H. Neil; and Skilling, John B. Suspension strut. 4,475,722, Cl. 267-9.00C.

Patton, Jerry C., to Crosby Group, Inc., The. Apparatus and method for assembly-disassembly of a spring loaded hook. 4,475,755, Cl. 294-82.00R.

Patton, Stephen M. External fixation apparatus. 4,475,546, Cl. 128-92.00A.

Patzschke, Hans-Peter; and Ehmann, Eduard, to Herberts Gesellschaft mit beschraenkter Haftung. Aqueous coating composition. 4,476,261, Cl. 523-402.000.

Paulsson, Bertil; and Kyander, Aarno, to B.A. Innovation Aktiebolag. Vehicle for the temporary storage of waste. 4,475,862, Cl. 414-513.000.

Paulsson, Hjalmar. Lifting fork. 4,475,758, Cl. 294-67.0AA.

Pawson, Beverly A., to Hoffmann-La Roche Inc. Trifluoromethoxy analogs of aromatic retinoids. 4,476,056, Cl. 260-404.000.

Peabody Development Company: *See*—
Smith, Jimmy B., 4,475,986, Cl. 201-7.000.

Peace, Clarence R., Jr.: *See*—
Dornbusch, Arthur H.; Benigni, Suzanne; and Peace, Clarence R., Jr., 4,475,837, Cl. 401-213.000.

Peachtree Doors, Inc.: *See*—
Governale, Bernard C., 4,475,313, Cl. 49-370.000.

Peanut Research & Testing Labs, Inc.: *See*—
Harris, Hubert, 4,476,148, Cl. 426-629.000.

Peeters, Hermann, to Dynamit Nobel AG. Method of preparing 2,4-dihydroxypyrimidine. 4,476,306, Cl. 544-309.000.

Pekkanen, Timo J., to Orion-yhtyma Oy. Iron-selenium preparation. 4,476,114, Cl. 424-164.000.

Pellegrom, Leonard A., to Easalign, Ltd. Registry device and method for using same. 4,475,288, Cl. 33-1.00B.

Pelster, Heinrich: *See*—
Diehl, Herbert; Pelster, Heinrich; and Habetz, Hubert, 4,476,320, Cl. 560-103.000.

Pelzner, Roger B.: *See*—
Stark, Marvin M.; Soelberg, Kenneth B.; Pelzner, Roger B.; and Bogdan, Mark S., 4,475,370, Cl. 72-53.000.

Penco, Eugenio: *See*—
Tomassini, Maurizio; Penco, Eugenio; and Tranquilli, Angelo, 4,475,788, Cl. 350-96.200.

Penfound, Keith A., to Minnesota Mining and Manufacturing Company. Spectrally sensitized photothermographic materials and preparation thereof. 4,476,220, Cl. 430-569.000.

Pengilly, Brian W., to Goodyear Tire & Rubber Company, The. High clarity, low haze polyesters having reduced infrared heat-up times. 4,476,272, Cl. 524-398.000.

Pennwalt Corporation: *See*—
Mulligan, Gerard M., 4,475,820, Cl. 366-142.000.

Penoza, Frank J.; and Penoza, Thomas F. Split helix router bit. 4,475,850, Cl. 407-54.000.

Penoza, Thomas F.: *See*—
Penoza, Frank J.; and Penoza, Thomas F., 4,475,850, Cl. 407-54.000.

Pentecost, P. Levon: *See*—
Bremer, Paul W.; Bremer, Ross L.; and Pentecost, P. Levon, 4,475,550, Cl. 128-303.00B.

Percival, Worth H.; and Wells, David N., to United Stirling AB. Window for solar receiver for a solar-powered hot gas engine. 4,475,538, Cl. 126-439.000.

Perini, Fabio. Apparatus and method for glueing the outer end of a stick of wound paper material. 4,475,974, Cl. 156-187.000.

Perkin-Elmer Corporation, The: *See*—
Brunner, Timothy A., 4,475,811, Cl. 355-133.000.
Katz, Elena; Ogan, Kenneth L.; and Scott, Raymond P. W., 4,476,026, Cl. 210-656.000.

Perkins, Patrick D.: *See*—
Chang, Clarence D.; Chu, Cynthia T. W.; Perkins, Patrick D.; and Valyocsik, Ernest W., 4,476,338, Cl. 585-322.000.

Persons, Charles, II, to Persons-Majestic Manufacturing Co. Adjustable backrest for cycle type seat. 4,475,770, Cl. 297-353.000.

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Persons, Charles, II, 4,475,770, Cl. 297-353.000.

Pesa, Frederick A.; and Graham, Anne M., to Standard Oil Company, The. Synthesis gas catalyst. 4,476,247, Cl. 502-325.000.

Peschau, Gerhard: *See*—
Pforr, Gerhard; Appl, Max; Voelkl, Erfried; Stark, Hans; and Peschau, Gerhard, 4,475,749, Cl. 285-47.000.

Peter, Cornelius: *See*—
Burkel, Rainer; Denamps, Jean; and Peter, Cornelius, 4,475,402, Cl. 73-724.000.

Petroleum Instrumentation & Technological Services: *See*—
Hayatdavoudi, Asadollah, 4,475,603, Cl. 175-65.000.

Peyser, Eliot; and Peyser, Miriam. Garment having adjustable sleeve means. 4,475,252, Cl. 2-125.000.

Peyser, Miriam: *See*—
Peyser, Eliot; and Peyser, Miriam, 4,475,252, Cl. 2-125.000.

Pfahler, Gerhard: *See*—
Wiezer, Hartmut; and Pfahler, Gerhard, 4,476,302, Cl. 544-198.000.

Pfizer Inc.: *See*—
Andrews, Glenn C., 4,476,312, Cl. 549-70.000.
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,476,131, Cl. 424-258.000.
Howard, Harry R., Jr.; and Sarges, Reinhard, 4,476,307, Cl. 546-201.000.

Pforr, Gerhard; Appl, Max; Voelkl, Erfried; Stark, Hans; and Peschau, Gerhard, to BASF Aktiengesellschaft. Flange coupling. 4,475,749, Cl. 285-47.000.

Philip Morris Incorporated: *See*—
Thatcher, Richard E.; Odom, Horace L.; and Edwards, Ronald L., 4,475,562, Cl. 131-110.000.

Phillips, Bobby M., to Eastman Kodak Company. Process for manufacture of textile yarns. 4,476,079, Cl. 264-154.000.

Phillips Petroleum Company: *See*—
Blackwell, Jennings P., Jr., 4,476,265, Cl. 524-10.000.
Cleary, James W., 4,476,284, Cl. 525-92.000.
Josephson, Charles B., 4,476,033, Cl. 252-8.55C.
Kimble, James B., 4,476,344, Cl. 585-661.000.
Schirmer, Robert M.; and Thornberry, William E., 4,475,883, Cl. 431-158.000.
Senatore, Guy, 4,476,273, Cl. 524-426.000.
Van Pool, Joe; and Potts, Mack F., 4,476,097, Cl. 422-112.000.

Phillips, Raymond M. Wave motion absorber for water bed mattresses. 4,475,257, Cl. 5-450.000.

Piccolo, Dominick: *See*—
Netherwood, Shelley; Blackwell, Bernie; and Piccolo, Dominick, 4,476,142, Cl. 426-3.000.

Pierre Fabre, SA: *See*—
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,476,061, Cl. 260-501.170.

Piezo Electric Products, Inc.: *See*—
Stone, W. Porter, 4,475,823, Cl. 374-1.000.

Piggin, Peter R., to Air Pollution (Equipment) Limited. Filter device for removing particulate material from gases. 4,475,933, Cl. 55-287.000.

Pike, Daniel W.; Crawley, Phillip J.; Marshall, John L.; and Martin, Steve A., to Prier Brass Manufacturing Co. Anti-syphon freezeless water hydrant. 4,475,570, Cl. 137-218.000.

Pilarski, Regis V.: *See*—
Crawford, Ray V.; Pilarski, Regis V.; and Rumpf, Robert J., 4,475,769, Cl. 297-331.000.

Pilkington Brothers P.L.C.: *See*—
Brunt, William H., 4,475,817, Cl. 366-3.000.
Pioneer Electronic Corporation: *See*—
Ishida, Koji, 4,476,586, Cl. 455-207.000.
Ishii, Satoshi, 4,476,444, Cl. 330-297.000.
Sato, Reisuke, 4,476,439, Cl. 330-254.000
Tokumo, Akio; and Kato, Masayuki, 4,476,571, Cl. 381-57.000.
Watanabe, Kazuo; Kommami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, 4,476,502, Cl. 360-65.000.
Pirali, Giorgio: *See*—
Coronelli, Carolina; Borghi, Angelo; Pirali, Giorgio; and Mistrello, Giovanni, 4,476,111, Cl. 424-119.000.
Pitt, Reinhold: *See*—
Dibelius, Gunther; and Pitt, Reinhold, 4,475,343, Cl. 60-648.000.
Placon Corporation: *See*—
Borst, Rodney D.; and Herr, Daniel C., 4,475,881, Cl. 425-397.000.
Plan-Sell Oy: *See*—
Raippo, Jorma, 4,475,644, Cl. 198-407.000.
Plank, Charles J.: *See*—
Kerr, George T.; Plank, Charles J.; and Rosinski, Edward J., 4,476,330, Cl. 568-806.000.
Ploog, Uwe; Wegener, Ingo; Glasl, Johann; Erwied, Werner; Bartnick, Bernhard; and Hofer, Rainer, to Henkel Kommanditgesellschaft auf Aktien. Free flow, readily dilutable aqueous concentrates of a tenside of the sulfate and sulfonate type. 4,476,037, Cl. 252-354.000.
Poeppel, Roger B.; and Dusek, Joseph T., to United States of America, Energy. Solid oxide fuel cell having monolithic cross flow core and manifolding. 4,476,196, Cl. 429-32.000.
Poetsch, Dieter; and Massmann, Volker, to Robert Bosch GmbH. Television scanning of motion picture films of different frame aspect ratios. 4,476,493, Cl. 358-214.000.
Pohl, Herbert A., to D.E.P. Systems, Inc. Apparatus for electrofusion of biological particles. 4,476,004, Cl. 204-299.00R.
Pohle, Richard H.; and Ohlmann, Robert C., to United States of America, Air Force. Method of producing a buried long period grating. 4,476,161, Cl. 427-162.000.
Pokalsky, Peter A.: *See*—
Cooper, Michael N.; and Pokalsky, Peter A., 4,476,459, Cl. 340-572.000.
Polach, Wilhelm: *See*—
Eckert, Konrad; Muller, Klaus; Linder, Ernst; Polach, Wilhelm; and Britsch, Heinz, 4,475,524, Cl. 123-568.000.
Ponomarev, Ivan K.: *See*—
Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,475,587, Cl. 165-140.000.
Pont-A-Mousson S.A.: *See*—
Pamart, Joel, 4,475,721, Cl. 266-236.000.
Pope, Malcolm: *See*—
Punia, David T.; Pope, Malcolm; and Donnermeyer, Dennis, 4,475,401, Cl. 73-658.000.
Popiel, Lawrence: *See*—
Moss, William H.; Popiel, Lawrence; and Scheib, Thomas J., 4,475,482, Cl. 122-379.000.
Popko, Valery V.: *See*—
Ioanesian, Jury R.; and Popko, Valery V., 4,475,605, Cl. 175-107.000.
Popovich, Robert P.; and Moncrief, Jack W. Method of peritoneal dialysis involving ultraviolet radiation of dialysis apparatus. 4,475,900, Cl. 604-28.000.
Poppe, Wassily; and Chen, Yu-Tsai, to Standard Oil Company. Polyamide compositions from mixtures of trimethylhexamethylene diamine, hexamethylene diamine and diacids. 4,476,280, Cl. 524-606.000.
Poppe, Werner; van Rijekevorsel, Rainer; Ruppender, Uwe; and Macho, Heinz, to Boehringer Mannheim GmbH. Process for the production of an analysis test strip. 4,476,149, Cl. 427-2.000.
Porcelli, Richard V., to Halcon SD Group, Inc., The. Separation of tars from carbonylation reaction mixtures. 4,476,237, Cl. 502-31.000.
Porter, Darrell D.: *See*—
York, Earl D.; and Porter, Darrell D., 4,475,965, Cl. 149-21.000.
Porter, Harvey, to Royal Factories, Incorporated. Modular protective grill. 4,475,309, Cl. 49-55.000.
Portnoff, Joel B., to Merck & Co., Inc. Medicament container and transfer device. 4,475,914, Cl. 604-414.000.
Posey, Robert G.; and Culbertson, Edwin C., to American Hoechst Corporation. Copolyester primed polyester film. 4,476,189, Cl. 428-336.000.
Posluszny, Joseph V.: *See*—
Palmer, Burton J.; and Posluszny, Joseph V., 4,476,238, Cl. 502-31.000.
Potts, Kevin T., to Rensselaer Polytechnic Institute. Pyrylium salts. 4,476,313, Cl. 549-213.000.
Potts, Mack F.: *See*—
Van Pool, Joe; and Potts, Mack F., 4,476,097, Cl. 422-112.000.
Povio, Raymond A.: *See*—
Clausing, Don P.; Holmes, Maurice F.; Povio, Raymond A.; and Rebres, Robert P., 4,475,732, Cl. 271-10.000.
PPG Industries, Inc.: *See*—
Das, Suryya K.; and Kania, Charles M., 4,476,286, Cl. 525-162.000.
Girgis, Mikhail M., 4,476,191, Cl. 428-378.000.
Prelletz, Edward R.; and Warden, Gerald D., to Bell & Howell Company. Cassette handling apparatus with improved control arrangement. 4,476,506, Cl. 360-96.600.
Premont, Emile J.: *See*—
Patacca, Angelo M.; and Premont, Emile J., 4,475,864, Cl. 415-9.000.
Prevot, Stephane C.; and Krishnakumar, Suppayan M., to Continental Group, Inc., The. Radio frequency heating system for heating thermoplastic material preforms. 4,476,364, Cl. 219-10.810.
Price, Howard M.: *See*—
Bourland, Gordon, Jr.; and Price, Howard M., 4,475,624, Cl. 181-292.000.
Prier Brass Manufacturing Co.: *See*—
Pike, Daniel W.; Crawley, Phillip J.; Marshall, John L.; and Martin, Steve A., 4,475,570, Cl. 137-218.000.
Prince, James M.: *See*—
Collins, H. Dale; Prince, James M.; and Davis, Thomas J., 4,476,434, Cl. 324-233.000.
Prince, Paul R., to Hughes Aircraft Company. Charge coupled device subtractor. 4,476,568, Cl. 377-60.000.
Privett, Eric B. Apparatus for dispensing a liquid. 4,475,307, Cl. 47-79.000.
Procter & Gamble Company, The: *See*—
Dornbusch, Arthur H.; Benigni, Suzanne; and Peace, Clarence R., Jr., 4,475,837, Cl. 401-213.000.
Gellert, Dale A., 4,475,911, Cl. 604-367.000.
Ooms, Julius, 4,476,031, Cl. 252-8.800.
Wnuk, Andrew J., 4,476,180, Cl. 428-220.000.
Wong, Louis F.; Sterling, Rosstain F.; and Borcher, Thomas A., Sr., 4,476,046, Cl. 252-550.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Dugua, Jacques, 4,476,101, Cl. 423-253.000.
Promoli, Johann C.; Guse, Rolf; and Tabibi, Sohrab, to Schubert & Salzer, A.G. Spinning machine, especially an open-end spinning machine, with a plurality of spinning units and with a maintenance device movable along the machine. 4,475,331, Cl. 57-263.000.
Pronine, Didier: *See*—
Heymes, Rene; Bonnet, Alain; and Pronine, Didier, 4,476,124, Cl. 424-246.000.
Proto Planning Co.: *See*—
Sakai, Yasuharu; and Matsui, Kazuhiro, 4,475,374, Cl. 72-452.000.
Prucher, Bryan P. Spot welding electrode. 4,476,372, Cl. 219-120.000.
Prusak, John J.: *See*—
Turner, Robert L.; and Prusak, John J., 4,475,966, Cl. 156-73.100.
Punater, Dineshchandra G.; and Herman, John L., to Harris Graphics Corporation. Blade holding device. 4,475,425, Cl. 83-700.000.
Punia, David T.; Pope, Malcolm; and Donnermeyer, Dennis, to United States of America, Health and Human Services. Vibration dosimeter. 4,475,401, Cl. 73-658.000.
Puraq Company, The: *See*—
Lazare, Leon, 4,475,352, Cl. 62-101.000.
Lazare, Leon, 4,475,353, Cl. 62-101.000.
Purdue Frederick Company, The: *See*—
Shetty, Bola V.; McFadden, Arthur; and Hofer, Peter, 4,476,311, Cl. 548-531.000.
Puskas, Imre; and Cerefice, Steven A., to Standard Oil Company (Indiana). Process for preparing palladium on carbon catalysts for purification of crude terephthalic acid. 4,476,242, Cl. 502-185.000.
Pyrochem, Inc.: *See*—
Gravely, David A., 4,475,466, Cl. 110-238.000.
Quikoton AG: *See*—
Bachmann, Albert; Walti, Moritz; and Benz, Gottlieb, 4,476,173, Cl. 428-57.000.
Quinones, Matthew M.; Mirow, Fred A.; and Troup, Robert M., to Honeywell Information Systems Inc. Connection of a number of work stations to a single conductor coaxial bus. 4,476,543, Cl. 364-900.000.
R. M. Smith, Inc.: *See*—
Hauger, Harry L.; and Beal, Glenn I., 4,475,689, Cl. 239-318.000.
Rabe, William T.; and Rau, Jim L., to TRW Inc. Power steering control apparatus. 4,475,440, Cl. 91-375.00A.
Rackley, Darwin P.: *See*—
Bushaw, Kenneth A.; Rackley, Darwin P.; and Woodward, Milton H., 4,476,522, Cl. 364-200.000.
Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, to General Electric Company. Method of making an integrated circuit incorporating low voltage and high voltage semiconductor devices. 4,475,280, Cl. 29-577.00C.
Rain, Don W.: *See*—
Brown, David T.; Rain, Don W.; and Schmalz, Richard J., 4,476,524, Cl. 364-200.000.
Raippo, Jorma, to Plan-Sell Oy. Method and apparatus for feeding lumber. 4,475,644, Cl. 198-407.000.
Raitto, David A. Key holder. 4,475,367, Cl. 70-456.00R.
Ramsey Engineering Company: *See*—
Motsinger, James V., 4,476,460, Cl. 340-617.000.
Rand, Peter B.: *See*—
Mead, Judith W.; Montoya, Orelio J.; Rand, Peter B.; and Willan, Vernon O., 4,476,159, Cl. 427-136.000.
Rando Machine Company: *See*—
Wood, Dennis E., 4,475,272, Cl. 19-106.00R.
Rao, Jayanth P., to Baylor Company. Water brake. 4,475,636, Cl. 188-296.000.
Rashev, Tzolo V.; Valkov, Lyudmil K.; Rasheva, Ivanka A.; Stoyanov, Stoyan M.; Kossev, Danail K.; and Lambev, Yordan G., to Institute Po Metaloznante I Technologia Na Metalite. Method and system for control of the electroslag remelting. 4,476,565, Cl. 373-50.000.
Rasheva, Ivanka A.: *See*—
Rashev, Tzolo V.; Valkov, Lyudmil K.; Rasheva, Ivanka A.; Stoyanov, Stoyan M.; Kossev, Danail K.; and Lambev, Yordan G., 4,476,565, Cl. 373-50.000.

Ratajczyk, James D.: *See—*
Haviv, Fortuna; Ratajczyk, James D.; and Fischer, Francis E., 4,476,137, Cl. 424-272.000.
Rathke, Jerome W.: *See—*
Chen, Michael J.; and Rathke, Jerome W., 4,476,334, Cl. 568-902.000.
Rau, Jim L.: *See—*
Rabe, William T.; and Rau, Jim L., 4,475,440, Cl. 91-375.00A.
Raveling, Hermann: *See—*
Michaud, Horst; Raveling, Hermann; and Seeholzer, Josef, 4,475,939, Cl. 71-28.000.
Raymond Kaiser Engineers Inc.: *See—*
Cain, George R.; and Sczerba, Stanley T., 4,475,989, Cl. 202-251.000.
Raytheon Company: *See—*
Blight, Ronald E., 4,476,446, Cl. 333-32.000.
RCA Corporation: *See—*
Bowman, David F., 4,476,470, Cl. 343-778.000.
Muterspaugh, Max W., 4,476,583, Cl. 455-180.000.
Sheean, David A., 4,476,498, Cl. 358-330.000.
Turner, Robert L.; and Prusak, John J., 4,475,966, Cl. 156-73.100.
Rea, William V., to Ampex Corporation. Metal polishing composition and process. 4,475,981, Cl. 156-636.000.
Reading, Kenneth A. L. Shovel adapter for hand tool. 4,475,756, Cl. 294-51.000.
Rebres, Robert P.: *See—*
Clausing, Don P.; Holmes, Maurice F.; Povio, Raymond A.; and Rebres, Robert P., 4,475,732, Cl. 271-10.000.
Reczek, James A.; and Elwood, James K., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible cyan dye-releasing compounds and precursors thereof. 4,476,207, Cl. 430-17.000.
Redland Technology Limited: *See—*
Aston, Geoffrey W.; and Smart, Roderick M., 4,475,936, Cl. 65-142.000.
Reece, D. C., to Burlington Industries, Inc. Automatic tension controller ball creel. 4,475,694, Cl. 242-54.00R.
Reed, C. Lawson; and George, J. Anthony, to Xomox Corporation. One piece top seal for a valve. 4,475,713, Cl. 251-214.000.
Reed, Charles F., to Avery International Corporation. Label roll manufacture. 4,475,969, Cl. 156-152.000.
Reed, Joseph, to International Telephone and Telegraph Corporation. Baseband demodulator for FM signals. 4,476,585, Cl. 455-207.000.
Reed, Raymond E. Analgesic composition and method of treating subdermal pain. 4,476,115, Cl. 424-164.000.
Reed, Scott T.: *See—*
Brinker, C. Jeffrey; and Reed, Scott T., 4,476,156, Cl. 427-82.000.
Reeder, Milton E.; and Moehlenpah, Walter G., to Moehlenpah Industries, Inc. Web member. 4,475,328, Cl. 52-693.000.
Re Fiorentin, Stefano: *See—*
Ansaldi, Ermanno; and Re Fiorentin, Stefano, 4,475,406, Cl. 73-861.290.
Regie Nationale des Usines Renault: *See—*
Pannier, Gerard; and Roumy, Jean C., 4,476,530, Cl. 364-424.100.
Reichle, Walter T., to Union Carbide Corporation. Catalyzed aldol condensations. 4,476,324, Cl. 568-388.000.
Reid, Alan F.; and Zuiderwyk, Martin A. M., to Commonwealth Scientific and Industrial Research Organization. Method and apparatus for material analysis. 4,476,386, Cl. 250-310.000.
Reiff, Theodore R. Rapid measurement of colloid osmotic equilibrium pressure. 4,475,556, Cl. 128-673.000.
Reinhard, Russell R.; Dorawala, Tansukhlal G.; and Kerr, Edwin R., to Texaco Inc. Dehydrogenation process using a rhodium catalyst. 4,476,339, Cl. 585-379.000.
Reininger, Hermann: *See—*
Idstein, Hermann; Silbereisen, Dieter; and Reininger, Hermann, 4,475,979, Cl. 156-542.000.
Reis, Norman I. Bone gripping forceps. 4,475,544, Cl. 128-92.0EA.
Related Energy & Security: *See—*
Heise, Stanley R.; Blackston, Michael D.; Zekich, Michael B.; and Parselle, John L. B., 4,475,308, Cl. 49-42.000.
Remes, Scott, to Minnesota Valley Engineering, Inc. Method and apparatus for filling cryogenic liquid cylinders. 4,475,348, Cl. 62-55.000.
Renger, Hagen, to Emile Egger & Cie SA. Free-flow-pump. 4,475,868, Cl. 415-213.00A.
Rensselaer Polytechnic Institute: *See—*
Potts, Kevin T., 4,476,313, Cl. 549-213.000.
Repa Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,475,745, Cl. 280-804.000.
Fohl, Artur, 4,475,779, Cl. 339-5.00M.
Repenning, Detlev; and Lindner, Bernd, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,476,201, Cl. 429-62.000.
Repligen Corporation: *See—*
Herlihy, Walter C.; and Epstein, David M., 4,476,300, Cl. 536-17.400.
Rescue Cable Design, Inc.: *See—*
Asplin, William A., Sr., 4,475,715, Cl. 254-134.30R.
Retrotec, Inc.: *See—*
Dunn, Joseph V., 4,475,977, Cl. 156-345.000.
Reutler, Herbert: *See—*
Muller-Frank, Ulrich; Reutler, Herbert; and Ullrich, Manfred, 4,476,089, Cl. 376-381.000.
Reutlinger, Wolf-Dieter. Method and device for positioning workpieces to be balanced. 4,475,393, Cl. 73-462.000.
Rheinisch-Westfalisches Elektrizitatswerk AG: *See—*
Ambros, Rainer; Brenner, Norbert; Fischer, Jurgen; Paffrath, Gottfried; and Schroeder, Henrich J., 4,476,048, Cl. 252-632.000.
Rhemer, Chris C.; Hughes, Scott E.; and Gostic, William J., to United Technologies Corporation. Solid state production of multiple single crystal articles. 4,475,980, Cl. 156-603.000.
Ribas, Jean-Louis; and Chenavier, Gilbert, to Majorette S.A. Pad for launching toy vehicles onto a track. 4,475,303, Cl. 446-429.000.
Ribka, Joachim: *See—*
Hunger, Klaus; Ribka, Joachim; Weingarten, Friedrich; and Rieper, Wolfgang, 4,476,052, Cl. 260-157.000.
Rice, George W.: *See—*
Waters, Kenneth H.; and Rice, George W., 4,476,552, Cl. 367-56.000.
Rich, Stanley R., to Advanced Energy Dynamics. Method of treating coal for increasing the availability of coal-fired boilers. 4,475,922, Cl. 44-1.00C.
Richardson-Vicks Inc.: *See—*
Cropton, Rupert J., 4,475,838, Cl. 401-270.000.
Riche, Francoise: *See—*
Bardy, Andre ; Comet, Michel; Coornaert, Sabine; Mathieu, Jean-Paul; Riche, Francoise; and Vidal, Michel, 4,476,106, Cl. 424-1.100.
Richter, Hermann: *See—*
Durr, Heinrich; Haubrich, Lothar; Weber, Wendelin; and Richter, Hermann, 4,475,826, Cl. 400-124.000.
Ricoh Company, Ltd.: *See—*
Kanno, Tadaaki; and Higashi, Yuichiro, 4,475,804, Cl. 355-3.0FU.
Omi, Kyoji, 4,475,805, Cl. 355-8.000.
Rideal, Graham R.: *See—*
Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., 4,476,181, Cl. 428-220.000.
Rieper, Wolfgang: *See—*
Hunger, Klaus; Ribka, Joachim; Weingarten, Friedrich; and Rieper, Wolfgang, 4,476,052, Cl. 260-157.000.
Riker Laboratories, Inc.: *See—*
Wade, James J., 4,476,130, Cl. 424-251.000.
Riley, James K.; and Flax, Stephen W., to General Electric Company. Method and means for attaining ultrasonic attenuation by vector sample averaging. 4,475,397, Cl. 73-599.000.
Riley, William J., Jr., to EG&G, Inc. Methods and apparatus for rapid and accurate frequency syntonization of an atomic clock. 4,476,445, Cl. 331-3.000.
Rimmele, Karl: *See—*
Fuchs, Ernst; Rimmele, Karl; and Bieri, Hans, 4,475,423, Cl. 83-199.000.
Rinck, Jean; and Lecomte, Alain, to Manufacture De Machines Du Haut-Rhin S.A. Machine for the continuous coating of a body of revolution. 4,475,479, Cl. 118-707.000.
Riordan, Hugh E., to Brunswick Corporation. Programmable fuel economy optimizer for an internal combustion engine. 4,475,506, Cl. 123-352.000.
Risler, Wolfgang: *See—*
Koch, Dieter; and Risler, Wolfgang, 4,475,821, Cl. 366-160.000.
Roach, Jere H.: *See—*
Cammann, Fred W.; Nester, John; and Roach, Jere H., 4,476,368, Cl. 219-69.00V.
Robbins & Myers, Inc.: *See—*
Foughty, Joan S., 4,475,872, Cl. 417-315.000.
Robert Bosch GmbH: *See—*
Burkel, Rainer; Denampa, Jean; and Peter, Cornelius, 4,475,402, Cl. 73-724.000.
Eckert, Konrad; Muller, Klaus; Linder, Ernst; Polach, Wilhelm; and Britsch, Heinz, 4,475,524, Cl. 123-568.000.
Eheim, Franz; and Fehlmann, Wolfgang, 4,475,519, Cl. 123-502.000.
Flaig, Ulrich; and Locher, Johannes, 4,475,513, Cl. 123-446.000.
Greiner, Max; and Konrath, Karl, 4,475,521, Cl. 123-502.000.
Grunwald, Werner; and Schmatz, Jurgen, 4,475,491, Cl. 123-146.50A.
Hascher-Reichl, Asta; Kubach, Hans; and Gross, Werner, 4,475,690, Cl. 239-585.000.
Poettsch, Dieter; and Massmann, Volker, 4,476,493, Cl. 358-214.000.
Schleupen, Richard, 4,475,526, Cl. 123-618.000.
Ziegler, Gerhard; and Thilow, Alfred, 4,475,995, Cl. 204-129.200.
Robert, Jack; and Alzieu, Jean, to Agence Nationale de Valorisation de la Recherche ANVAR. Lead-acid battery cells and manufacturing process thereof. 4,476,203, Cl. 429-139.000.
Roberts Display Corporation: *See—*
Roberts, Kenneth S., 4,475,658, Cl. 211-54.100.
Roberts, Kenneth S., to Roberts Display Corporation. Spring-loaded merchandising device. 4,475,658, Cl. 211-54.100.
Roberts, Richard W., to Borg-Warner Corporation. Variable displacement compressor. 4,475,871, Cl. 417-222.000.
Robertshaw Controls (Australia) Pty. Limited: *See—*
Garlick, Ronald G.; and Golman, Roman, 4,475,684, Cl. 236-12.140.
Robinson, Barnett J. Catalyst delivery system. 4,475,483, Cl. 123-1.00A.
Robinson, Ivan M., to Du Pont de Nemours, E. I., and Company. Polymeric carbonate diols of copolyether glycols and polyurethanes prepared therefrom. 4,476,293, Cl. 528-76.000.
Robinson, Tibor: *See—*
Kissling, Bruno; and Robinson, Tibor, 4,475,918, Cl. 8-495.000.
Rochford, Harry T.: *See—*
Talley, Paul E.; and Rochford, Harry T., 4,475,975, Cl. 156-234.000.

Rockwell-Golde GmbH: *See*—
Grimm, Rainer; Bohm, Horst; and Schafer, Peter, 4,475,767, Cl. 296-221.000.

Rockwell International Corporation: *See*—
Beegle, Mark J.; and Grimes, Mark W., 4,476,351, Cl. 179-77.000.
Hamermesh, Charles L., 4,476,256, Cl. 523-152.000.

Roedel, George F., to General Electric Company. Resins containing β-phenylethyl trifunctional siloxy units and method for making. 4,476,291, Cl. 528-14.000.

Roever, Otto A.: *See*—
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Rogers, Mark C.; and Gill, Michael, to Advanced Solar Systems. Nontracking parabolic collector apparatus. 4,475,537, Cl. 126-438.000.

Rohm Company Limited: *See*—
Tatsumi, Yutaka; and Taniguchi, Hideo, 4,476,377, Cl. 219-216.000.

Rohm GmbH: *See*—
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; Tilch, Willi; and Siol, Werner, 4,476,182, Cl. 428-265.000.

Rolls-Royce Limited: *See*—
Davies, Kenneth G., 4,475,869, Cl. 416-170.00R.

Romeo, Aurelio: *See*—
della Valle, Francesco; and Romeo, Aurelio, 4,476,119, Cl. 424-180.000.

Romig, Bernard E.: *See*—
Orlandea, Nicolae V.; Huang, Ray C.; Romig, Bernard E.; and Wiley, Jack C., 4,475,775, Cl. 305-28.000.

Roos, Ernst: *See*—
Schmidt, Adolf; and Roos, Ernst, 4,476,053, Cl. 260-192.000.

Root, John A.; and Scully, Michael J., to AMP Incorporated. T Bar cover latch. 4,475,786, Cl. 339-99.00R.

Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfamates. 4,475,944, Cl. 71-90.000.

Rosania, Lawrence J.: *See*—
Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, 4,475,919, Cl. 8-518.000.

Rose, Douglas N., to United States of America, Army. Process of and apparatus for laser annealing of film-like surface layers of chemical vapor deposited silicon carbide and silicon nitride. 4,476,150, Cl. 427-10.000.

Rose, Gerard: *See*—
Boutonnat, Maurice; and Rose, Gerard, 4,475,378, Cl. 73-23.000.

Rose, Wolfgang, to VEB Kombinat Textima. Design arrangement for knitting machines. 4,475,362, Cl. 66-75.200.

Rosemount Inc.: *See*—
Corpron, Gary P.; and Pagel, Roy E., 4,475,405, Cl. 73-861.240.

Rosenbaum, Robert S.: *See*—
Kessler, Jack H.; and Rosenbaum, Robert S., 4,476,108, Cl. 424-50.000.

Rosinski, Edward J.: *See*—
Kerr, George T.; Plank, Charles J.; and Rosinski, Edward J., 4,476,330, Cl. 568-806.000.

Ross, Norman C.; and Lettrich, Jeffrey J., to Kimes Corporation. Alkali earth metal oxide-based coating compositions. 4,475,949, Cl. 106-14.350.

Roth, Sydney J.: *See*—
Marino, Joseph A.; Kling, Michael J.; and Roth, Sydney J., 4,476,531, Cl. 364-431.010.

Rott, Hans: *See*—
Koerner, Gotz; Nickel, Friedhelm; Rott, Hans; and Schmidt, Gunter, 4,476,282, Cl. 524-837.000.

Roumy, Jean C.: *See*—
Pannier, Gerard; and Roumy, Jean C., 4,476,530, Cl. 364-424.100.

Rountry, Robert A., to Honeywell Inc. High pressure gas valve. 4,475,711, Cl. 251-85.000.

Roussel Uclaf: *See*—
Heymes, Rene ; and Lutz, Andre , 4,476,122, Cl. 424-246.000.
Heymes, Rene; Bonnet, Alain; and Prosine, Didier, 4,476,124, Cl. 424-246.000.

Roy, Aroon S.: *See*—
Keller, Hartmut; and Roy, Aroon S., 4,476,151, Cl. 427-34.000.

Royal Factories, Incorporated: *See*—
Porter, Harvey, 4,475,309, Cl. 49-55.000.

Rubin, Martin I. Patient treatment method. 4,476,381, Cl. 235-375.000.

Ruckhaber, Rainer: *See*—
Neier, Wilhelm; Webers, Werner; Ruckhaber, Rainer; Osterburg, Gunther; and Ostwald, Wolf J., 4,476,333, Cl. 568-899.000.

Ruehle, William H., to Mobil Oil Corporation. Selecting offset as a function of time and velocity to stack seismograms with high signal to noise ratio. 4,476,551, Cl. 367-43.000.

Ruh, Jurgen: *See*—
Wanke, Johannes; Difflipp, Kurt; and Ruh, Jurgen, 4,475,459, Cl. 101-410.000.

Rumpf, Robert J.: *See*—
Crawford, Ray V.; Pilarski, Regis V.; and Rumpf, Robert J., 4,475,769, Cl. 297-331.000.

Runkle, Dean E., to Bendix Corporation, The. Braking apparatus for an automotive vehicle. 4,475,336, Cl. 60-545.000.

Ruppender, Uwe: *See*—
Poppe, Werner; van Rijekevorsel, Rainer; Ruppender, Uwe; and Macho, Heinz, 4,476,149, Cl. 427-2.000.

Russ, Peter, to Naxos-Union Schleifmittel-Und Schleifmaschinenfabrik. Device for clamping crankshafts in grinding machines. 4,475,318, Cl. 51-237.0CS.

Russo, Joseph L.; Sonder, Richard; and Schwartz, Wesley W., to Square D Company. Medical see-through columns. 4,475,322, Cl. 52-27.000.

Rutishauser, Albert. Transport apparatus for conveying a perforated recording medium to a platen or the like. 4,475,677, Cl. 226-74.000.

Rutkowski, David J.: *See*—
Colovas, Denny D.; Rutkowski, David J.; and Ver Ploeg, Wendell J., 4,475,380, Cl. 73-114.000.

Rutledge, Russell P.: *See*—
Rutledge, Woodrow T., Jr.; Rutledge, Russell P.; and Freeman, John E., 4,475,404, Cl. 73-827.000.

Rutledge, Woodrow T., Jr.; Rutledge, Russell P.; and Freeman, John E., to Fiberflex Products, Inc. Pull tester. 4,475,404, Cl. 73-827.000.

Rutter, Christopher C. Fluid dispenser. 4,475,670, Cl. 222-83.000.

Ryobi Ltd.: *See*—
Ishii, Koji; Shinmoto, Takahiko; Maehara, Kenso; and Honkawa, Yoshinori, 4,475,456, Cl. 101-144.000.

Saari, Veikko R., to AT&T Bell Laboratories. Switched capacitor high-pass filter. 4,476,448, Cl. 333-173.000.

Sadan, Abraham: *See*—
Atwood, George E.; Cochran, Douglas E.; Sadan, Abraham; Burnett, Charles; Tyree, Phillip O.; and Fletcher, Archibald W., 4,475,771, Cl. 299-4.000.

Saegusa, Takashi: *See*—
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Saggese, Joseph P., to Avco Everett Research Laboratory, Inc. Rotary indexing laser mirror apparatus. 4,476,374, Cl. 219-121.0LB.

Saidla, Glen W., to Whitney & Company, Inc. Method of open forming an expanded polyester resin article involving a controlled induction period. 4,476,076, Cl. 264-45.300.

St. Laurent, Andre M.: *See*—
L'Abbe, Richard; St. Laurent, Andre M.; Newman, James A.; and Gallup, Brian M., 4,475,248, Cl. 2-2.500.

Saito, Junichi; and Kume, Toyohiko, to Nihon Tokushu Noyaku Seizo K.K. Process for preparing trichloroacrolein. 4,475,997, Cl. 204-158.00R.

Saito, Seiji: *See*—
Ayata, Naoki; Koumura, Noboru; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Kazuma, Koji, 4,476,486, Cl. 358-78.000.

Saito, Shozo, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device with operating voltage coupling region. 4,476,479, Cl. 357-42.000.

Saito, Tatsuya, to Kabushiki Kaisha Kaijirushi Hamono Center. Safety razor. 4,475,286, Cl. 30-87.000.

Saito, Toshitaka: *See*—
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Shibata, Masahiro; Saito, Toshitaka; and Yamakawa, Mitihiro, 4,476,008, Cl. 204-425.000.

Sakabe, Yukio: *See*—
Kanai, Kazuhiko; and Sakabe, Yukio, 4,475,967, Cl. 156-89.000.

Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, to Hitachi Shipbuilding & Engineering Co., Ltd. Device for gauging large load exerted on steel structure or the like. 4,475,609, Cl. 177-211.000.

Sakai, Yasuharu; and Matsui, Kazuhiro, to Japan Storage Battery Limited; and Proto Planning Co. Small press. 4,475,374, Cl. 72-452.000.

Sakaki, Hirokazu: *See*—
Ohba, Hisao; Oda, Kazutaka; Sakaki, Hirokazu; Shirai, Akira; and Ohashi, Azusa, 4,476,006, Cl. 204-17.000.

Sakakibara, Yoshiyasu; and Fukumura, Keiichi, to Nippondenso Co., Ltd. Engine cooling system control apparatus. 4,475,485, Cl. 123-41.050.

Sakano, Isao; Miyahara, Shiyoichiro; Yamada, Yoshitsugu; Okazaki, Yutaka; Tokuda, Hiroshi; Awaya, Akira; and Nakano, Takuo, to Mitsuitoatsu Chemicals, Inc. 2-Substituted thiazolyl-piperazine compounds, process for preparation thereof and utilizations thereof . 4,476,128, Cl. 424-250.000.

Sakanoue, Kei; Hirano, Shigeo; Ueda, Takehiko; and Adachi, Keiichi, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 4,476,219, Cl. 430-542.000.

Sako, Yoichiro; and Odaka, Kentaro, to Sony Corporation. Method of error correction. 4,476,562, Cl. 371-39.000.

Salensky, George A., to Union Carbide Corporation. Zinc rich coatings. 4,476,260, Cl. 523-402.000.

Saletta, Gary F.; Elms, Robert T.; and Engel, Joseph C., to Westinghouse Electric Corp. Circuit interrupter with front panel numeric display. 4,476,511, Cl. 361-96.000.

Salhi, Ali: *See*—
Labeeuw, Bernard; and Salhi, Ali, 4,476,123, Cl. 424-246.000.

Salkeld, Richard W.: *See*—
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Sallmann, Alfred: *See*—
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Salzburg, Herbert; Meyborg, Holger; Goyert, Wilhelm; and Barnes, James M., to Bayer Aktiengesellschaft. Process for the preparation of polyurethane elastomers using diols of the anhydro-tetritol series. 4,476,253, Cl. 521-176.000.

Samoilov, Constantin; and Samoilov, Miguel N. Hand-held embroidery machine. 4,475,473, Cl. 112-80.000.

Samoilov, Miguel N.: *See*—
Samoilov, Constantin; and Samoilov, Miguel N., 4,475,473, Cl. 112-80.000.

Sampson, Lorne G. Calculator. 4,476,380, Cl. 235-61.00B.

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Fox, Irwin, 4,476,027, Cl. 210-695.000.
Samuels, David: *See—*
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Sanborn, Harold C.; and Griffith, James B., to United Technologies Corporation. Contour forming conical shapes. 4,476,194, Cl. 428-585.000.
Sanden Corporation: *See—*
Sugimoto, Kazuo; and Terauchi, Kiyoshi, 4,475,875, Cl. 418-55.000.
Sander, Lothar S., to Amchem Products, Inc. Coating composition. 4,475,957, Cl. 148-6.160.
Sanders, James M.: *See—*
Hall, John B.; Sanders, James M.; and Siano, James N., 4,476,147, Cl. 426-534.000.
Sandoz Ltd.: *See—*
Baumann, Hans-Peter, 4,475,920, Cl. 8-542.000.
Kissling, Bruno; and Robinson, Tibor, 4,475,918, Cl. 8-495.000.
Neumann, Peter; and Bormann, Gerhard, 4,476,135, Cl. 424-270.000.
Sandys, Jeffery P.: *See—*
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Sankyo Manufacturing Company, Ltd.: *See—*
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Sano, Hideki, to Tokyo Shibaura Denki Kabushiki Kaisha. Air conditioning apparatus. 4,475,359, Cl. 62-272.000.
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Shibata, Masahiro; Saito, Toshitaka; and Yamakawa, Mitihiro, to Nippondenso Co., Ltd. Oxygen concentration-sensing device and the method of producing the same. 4,476,008, Cl. 204-425.000.
Sano, Shinichi: *See—*
Yamaguchi, Keiki; Sano, Shinichi; Akimoto, Hiromichi; Higashiizumi, Takao; Yamanaka, Mineo; and Ishihara, Takahiko, 4,475,553, Cl. 128-660.000.
Sano, Yoshiaki: *See—*
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Sanshin Kogyo Kabushiki Kaisha: *See—*
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Odashima, Rou, 4,475,488, Cl. 123-73.0AD.
Santrade Ltd.: *See—*
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Sanyo Electric Co., Ltd.: *See—*
Tanaka, Kouji; Ikeda, Osamu; and Nakayama, Yoshio, 4,476,580, Cl. 455-164.000.
Sapienza, Richard S.; Slegeir, William A.; and Foran, Michael T., to United States of America, Energy. Catalytic production of metal carbonyls from metal oxides. 4,476,103, Cl. 423-417.000.
Sarangapani, Srinivasan: *See—*
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Sarges, Reinhard: *See—*
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Sato, Eiji, to Hitachi, Ltd. Scroll fluid apparatus with axial sealing force. 4,475,874, Cl. 418-55.000.
Sato, Hideo: *See—*
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Sato, Ikuro; Tamagawa, Susumu; and Iwata, Ryuichi, to Nippon Electric Co., Ltd. Antenna apparatus including frequency separator having wide band transmission or reflection characteristics. 4,476,471, Cl. 343-779.000.
a, Reisuke, to Pioneer Electronic Corporation. Level shifting circuit. 4,476,439, Cl. 330-254.000.
Satz, Richard: *See—*
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Savin, Bruce A.; and Savin, Hollis C. Disposable bib. 4,475,250, Cl. 2-49.00R.
Savin, Hollis C.: *See—*
Savin, Bruce A.; and Savin, Hollis C., 4,475,250, Cl. 2-49.00R.
Sawicki, Zbigniew-Igor, to Siemens Aktiengesellschaft. Web and sheet paper feed mechanism for printers. 4,475,833, Cl. 400-605.000.
Scalesciani, Juan B. A., to Farmatis S.r.l. 1-Methyl-5-nitro-(2-substituted)-2H-imidazole derivatives, and use as bactericidal and protozoacidal agents. 4,476,138, Cl. 424-273.00R.
Schack, Carl J.: *See—*
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Schaefer, John O'N., to International Business Machines Corporation. Spliceless ribbon structure having leader and trailer and method of manufacture therefor. 4,475,830, Cl. 400-238.000.
Schafer, Peter: *See—*
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Scharff, Daniel H.; and Leytes, Lev J., to Beckman Instruments, Inc. Removable synthesis column. 4,476,017, Cl. 210-94.000.
Scharpf, Kurt: *See—*
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Scheib, Thomas J.: *See—*
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Scheidweiler, Andreas, to Cerberus AG. Smoke detector. 4,475,390, Cl. 73-431.000.
Scherzer, Julius: *See—*
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Schirmer, Robert M.; and Thornberry, William E., to Phillips Petroleum Company. Pressure control for steam generator. 4,475,883, Cl. 431-158.000.
Schlagenhaft, Johann: *See—*
Baackmann, Dirk; Hecht, Georg; Schlagenhaft, Johann; and Schnell, Karl, 4,476,561, Cl. 371-25.000.
Schleupen, Richard, to Robert Bosch GmbH. Apparatus for generating a signal train dependent on rotary speed. 4,475,526, Cl. 123-618.000.
Schlicker, Volker: *See—*
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Schlosser, Hermann, to Seitz-Werke GmbH. Fixed-cycle-controlled filling machine. 4,476,534, Cl. 364-479.000.
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Schmalz, Richard J.: *See—*
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Schmatz, Jurgen: *See—*
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Schmelzer Corporation: *See—*
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Schmidt, Adolf; and Roos, Ernst, to Bayer Aktiengesellschaft. Surface-active azo compounds. 4,476,053, Cl. 260-192.000.
Schmidt, Gunter: *See—*
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Schmidt, William P.: *See—*
Hegarty, William P.; and Schmidt, William P., 4,475,347, Cl. 62-17.000.
Schmitt, Gervase A.; and Schmitt, Ronald T. Method and apparatus for connecting boat railings. 4,475,840, Cl. 403-20.000.
Schmitt, Richard P.; Ciccone, Vincent J.; and Gardiner, William P., to V. J. Ciccone & Associates, Inc. Multiple element fluid separation device. 4,476,015, Cl. 210-93.000.
Schmitt, Ronald T.: *See—*
Schmitt, Gervase A.; and Schmitt, Ronald T., 4,475,840, Cl. 403-20.000.
Schmitz, Nicholas A.: *See—*
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Schmolka, Irving R., to BASF Wyandotte Corporation. Mouthwash composition. 4,476,107, Cl. 424-49.000.
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Schnell, Karl: *See—*
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Schoch, Daniel A.: *See—*
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Schockman, Robert L.; Busse, Vernon E.; Wissman, Terry L.; and Schoch, Daniel A., to Minster Machine Company, The. Method of assembling a mechanical press having a drop in drive assembly. 4,475,278, Cl. 29-434.000.
Schreiber, Manfred: *See—*
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Schreiber, Peter, to Fael S.A. Electrical resistance seam welding method and apparatus. 4,476,371, Cl. 219-83.000.
Schreiber, Winfried: *See—*
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Schroeder, Henrich J.: *See—*
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Schroeder, Richard B., to Hercules Incorporated. Docking sensor system. 4,475,810, Cl. 355-85.000.
Schubert & Salzer, A.G.: *See—*
Promoli, Johann C.; Guse, Rolf; and Tabibi, Sohrab, 4,475,331, Cl. 57-263.000.
Schubert & Salzer Aktiengesellschaft Maschinenfabrik: *See—*
Goldammer, Georg, 4,475,269, Cl. 19-80.00R.
Schubert, Werner. Device for introducing medical instruments into a body. 4,475,902, Cl. 604-95.000.
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Schulz, Donald N.: *See—*
Hall, James E.; and Schulz, Donald N., 4,476,240, Cl. 502-155.000.
Schulz, Joachim; and Thelen, Werner, to Aurora Konrad G. Schulz GmbH & Co. Device for heating and ventilating large-area vehicles. 4,475,687, Cl. 237-12.30A.
Schulz, Rainer R., to Parise and Sons, Inc. Dual inlet muffler assembly for truck hot water vacuum extraction machine. 4,475,264, Cl. 15-300.00A.
Schulz, Ronald N.: *See—*
Lai, Fang-shi J.; and Schulz, Ronald N., 4,475,982, Cl. 156-643.000.
Schumann, Klaus: *See—*
Kittscher, Peter; Schumann, Klaus; Altenschopfer, Theodor; Haumann, Wolfgang; and Smolka, Heinz G., 4,475,663, Cl. 220-87.000.

Schwartz, Richard G.: *See*—
Tilly, Lynn K.; and Schwartz, Richard G., 4,475,463, Cl. 105-208.000.

Schwartz, Wesley W.: *See*—
Russo, Joseph L.; Sonder, Richard; and Schwartz, Wesley W., 4,475,322, Cl. 52-27.000.

Schwartzberg, Fred R.; and Tobey, William H., to Martin Marietta Corporation. Box truss hoop. 4,475,323, Cl. 52-111.000.

Schwarzschild, Jack, to Timex Mecial Products Corporation. Levered scale with strain gauge tension link. 4,475,610, Cl. 177-211.000.

Schwertfeger, Werner: *See*—
Millauer, Hans; and Schwertfeger, Werner, 4,476,058, Cl. 260-458.00F.

SCM Corporation: *See*—
Owens, Phillip M., 4,476,263, Cl. 523-426.000.

Scott, David B.; Davies, Roderick D.; and See, Yee-Chaung, to Texas Instruments Incorporated. Silicide contacts for CMOS devices. 4,476,482, Cl. 357-71.000.

Scott, Raymond P. W.: *See*—
Katz, Elena; Ogan, Kenneth L.; and Scott, Raymond P. W., 4,476,026, Cl. 210-656.000.

Scott, Robert L.; Nejame, Samuel, Jr.; Jacobs, Charles S., Jr.; and Bell, Charles A. Fluorometric titrator. 4,476,095, Cl. 422-75.000.

Scovill Japan Kabushiki Kaisha: *See*—
Konno, Shigeru, 4,475,273, Cl. 24-108.000.

Scully, Michael J.: *See*—
Root, John A.; and Scully, Michael J., 4,475,786, Cl. 339-99.00R.

Sczerba, Stanley T.: *See*—
Cain, George R.; and Sczerba, Stanley T., 4,475,989, Cl. 202-251.000.

Seachem & Seaquist Valve Company: *See*—
Ori, Peter; and Kreider, Carleen, 4,475,667, Cl. 222-39.000.

Sears, Marvin; and Caprioli, Joseph, to Yale University. Composition and method for treatment of glaucoma. 4,476,140, Cl. 424-283.000.

Season-All Industries, Inc.: *See*—
Gibson, Richard L., 4,475,311, Cl. 49-176.000.

Seaver, Terry R.: *See*—
Wasserman, Philip D.; and Seaver, Terry R., 4,476,348, Cl. 179-2.00C.

Secretary of State for United Kingdom Atomic Energy Authority: *See*—
Stockwell, Claude L., 4,475,292, Cl. 34-10.000.

See, Yee-Chaung: *See*—
Scott, David B.; Davies, Roderick D.; and See, Yee-Chaung, 4,476,482, Cl. 357-71.000.

Seeholzer, Josef: *See*—
Michaud, Horst; Raveling, Hermann; and Seeholzer, Josef, 4,475,939, Cl. 71-28.000.

Segawa, Hirohisa: *See*—
Mizuno, Takaji; Segawa, Hirohisa; Ueguri, Shigeo; Tabata, Yooichiro; and Hiramoto, Seigo, 4,476,376, Cl. 219-130.210.

Seidel, Martin P.; and Fuller, Timothy J., to Westinghouse Electric Corp. Sulfur containing lignin modified alkaline earth treated phenolic impregnating resins for core layers of humidity resistant laminates. 4,476,193, Cl. 428-531.000.

Seifert, Rolf; and Schlicker, Volker, to Ing. Rolf Seifert Electronic, Firma. Air conditioner. 4,475,358, Cl. 62-186.000.

Seitz-Werke GmbH: *See*—
Schlosser, Hermann, 4,476,534, Cl. 364-479.000.

Selenia, Industrie Elettroniche Associate, S.p.A.: *See*—
Tomassini, Maurizio; Penco, Eugenio; and Tranquilli, Angelo, 4,475,788, Cl. 350-96.200.

Semenov, Mikhail K.: *See*—
Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,475,587, Cl. 165-140.000.

Sesatore, Guy, to Phillips Petroleum Company. Thermosetting compositions comprising conjugated diene polymers having pendant unsaturated groups and calcium carbonate. 4,476,273, Cl. 524-426.000.

Sendl, Ludwig; and Singer, Hans, to BHS Bayerische Berg-, Hutten- und Salzwerke Aktiengesellschaft. Container for receiving rubbish. 4,475,454, Cl. 100-229.00A.

Shang, Jer-Yu; Mei, Joseph S.; and Wilson, John S., to United States of America, Energy. Reversed flow fluidized-bed combustion apparatus. 4,475,884, Cl. 431-170.000.

Shape Inc.: *See*—
MacLeod, Robert B., Jr.; Landry, Vincent E.; and Gelardi, Paul J., 4,475,700, Cl. 242-197.000.

Sharp Kabushiki Kaisha: *See*—
Aiba, Masahiko; and Oku, Naohiro, 4,476,472, Cl. 346-75.000.

Sheaffer, Benjamin L., to Brunswick Corporation. Inlet tuning of crankcase supercharged four cycle engine. 4,475,499, Cl. 123-317.000.

Shedigian, Vandos, to Emhart Industries, Inc. Dielectric fluid for electrical capacitors. 4,476,516, Cl. 361-315.000.

Sheean, David A., to RCA Corporation. Deviation detector for FM video recording system. 4,476,498, Cl. 358-330.000.

Shell Oil Company: *See*—
Johnson, Thomas H., 4,476,340, Cl. 585-462.000.
Johnson, Thomas H., 4,476,343, Cl. 585-530.000.

Shenoi, Kishan: *See*—
Chang, Hyokang; Shenoi, Kishan; and Agrawal, Bgahwati P., 4,476,435, Cl. 329-50.000.

Sheppard, Clyde H.: *See*—
Lubowitz, Hyman R.; and Sheppard, Clyde H., 4,476,184, Cl. 428-288.000.

Sherwin, Martin B., to W. R. Grace & Co. Process for forming nitroparaffin. 4,476,336, Cl. 568-947.000.

Shetty, Bola V.; McFadden, Arthur; and Hofer, Peter, to Purdue Frederick Company, The. Analgesic 4-carboxy-pyrrolidin-2-one compound. 4,476,311, Cl. 548-531.000.

Shibata, Akira, to Chugai Denki Kogyo K.K. Method of diffusion cladding a Fe-containing base material for decorative articles and ornaments with precious metal constituents including Ag. 4,475,991, Cl. 204-15.000.

Shibata, Masahiro: *See*—
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Shibata, Masahiro; Saito, Toshitaka; and Yamakawa, Mitihiro, 4,476,008, Cl. 204-425.000.

Shimada, Thoziro: *See*—
Kitahara, Seiji; Mogi, Keitaro; Shimada, Thoziro; Noda, Fumio; and Tateyama, Yoshihiro, 4,476,144, Cl. 426-46.000.

Shimizu, Chiyuki, to Toshiba Silicone Co., Ltd. Dustproof film forming material. 4,476,278, Cl. 524-588.000.

Shimizu, Keizo: *See*—
Nagami, Hayashi; Taniguchi, Yoshisada; Otsu, Shinpei; Fujimura, Toshio; and Shimizu, Keizo, 4,476,556, Cl. 369-258.000.

Shimizu, Shigeo: *See*—
Koyama, Hiroaki; and Shimizu, Shigeo, 4,476,277, Cl. 524-509.000.

Shimizu, Yasuo: *See*—
Akada, Mitsuo; Masatomi, Tsunehiko; Shimizu, Yasuo; Torii, Shigeru; and Tanaka, Hideo, 4,475,992, Cl. 204-59.00R.

Shimura, Takeo: *See*—
Moriguchi, Hiroyuki; Shimura, Takeo; Kaneko, Tadashi; Nomori, Hiroyuki; and Nishiwaki, Akira, 4,476,209, Cl. 430-95.000.

Shingai, Masafumi: *See*—
Maeda, Tetsuro; Ohoka, Susumu; Shingai, Masafumi; and Igawa, Haruo, 4,476,266, Cl. 524-128.000.

Shinmoto, Takahiko: *See*—
Ishii, Koji; Shinmoto, Takahiko; Maehara, Kenso; and Honkawa, Yoshinori, 4,475,456, Cl. 101-144.000.

Shinozaki, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing schottky barrier diode. 4,476,157, Cl. 427-84.000.

Shionogi & Co., Ltd.: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Makino, Itsuo; and Ishiba, Teruyuki, 4,476,133, Cl. 424-269.000.

Shirai, Akira: *See*—
Ohba, Hisao; Oda, Kazutaka; Sakaki, Hirokazu; Shirai, Akira; and Ohashi, Azusa, 4,476,006, Cl. 204-17.000.

Shirley, Ian M.: *See*—
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,476,296, Cl. 528-481.000.

Shoaf, Myron D.; and Basile, Peter A., to General Foods Corporation. Reactant/gas separation means for beverage carbonation device. 4,475,448, Cl. 99-323.100.

Shoji, Masashi: *See*—
Kaneko, Takashi; and Shoji, Masashi, 4,476,427, Cl. 323-234.000.

Shoji, Takashi: *See*—
Watanabe, Ryozo; Kawasumi, Keiichi; Maeda, Shoichi; and Shoji, Takashi, 4,476,093, Cl. 422-61.000.

Shoketsu Kinzoku Kogyo Kabushiki Kaisha: *See*—
Kosugi, Seiji, 4,476,451, Cl. 335-262.000.

Shop-Vac Corporation: *See*—
Berfield, Robert C., 4,475,265, Cl. 15-414.000.

Siano, James N.: *See*—
Hall, John B.; Sanders, James M.; and Siano, James N., 4,476,147, Cl. 426-534.000.

Sibley, Richard D.: *See*—
Keller, William F.; and Sibley, Richard D., 4,475,565, Cl. 137-39.000.

Sica, Louis, Jr., to United States of America, Navy. High resolution diffraction grating. 4,475,792, Cl. 350-162.170.

Sieber, Axel, to Behringwerke Aktiengesellschaft. Process for the kinetic determination of immunocomplexes. 4,476,230, Cl. 436-507.000.

Siedel, Joachim: *See*—
Buschek, Herbert; Schlumberger, Helmut; and Siedel, Joachim, 4,476,223, Cl. 435-188.000.

Siefert, Kristine S., to Atlantic Richfield Company. Preparative process for alkaline earth metal, aluminum-containing spinels. 4,476,245, Cl. 502-302.000.

Siemens Aktiengesellschaft: *See*—
Haertl, Christof, 4,476,353, Cl. 179-107.00E.
Hagen, Rolf; and Weidner, Peter, 4,476,347, Cl. 178-3.000.
Keller, Hartmut; and Roy, Aroon S., 4,476,151, Cl. 427-34.000.
Mueller, Wolfgang, 4,476,545, Cl. 365-178.000.
Sawicki, Zbigniew-Igor, 4,475,833, Cl. 400-605.000.
Wachs, Walter, 4,475,832, Cl. 400-496.000.
Zimmermann, Horst, 4,476,417, Cl. 318-329.000.

Sigma Tau Indistrie Farmaceutiche Riunites, p.A: *See*—
Gonella, Jacques, 4,476,120, Cl. 424-180.000.

Signfix Limited: *See*—
Heard, Robert A. H., 4,475,652, Cl. 206-409.000.

Silbereisen, Dieter: *See*—
Idstein, Hermann; Silbereisen, Dieter; and Reininger, Hermann, 4,475,979, Cl. 156-542.000.

Simmonds, Robert C., Jr.: *See*—
Morse, Albert I.; and Simmonds, Robert C., Jr., 4,475,477, Cl. 118-406.000.

Simon, Philip E. Wine preservation system. 4,475,576, Cl. 141-98.000.

Singer Company, The: *See—*
Dicke, William C., 4,475,316, Cl. 51-170.0TL.
Dicke, William C., 4,475,317, Cl. 51-170.0TL.
Lukawich, Joseph, 4,475,784, Cl. 339-43.000.
Zylbert, Thaddeus J., 4,475,475, Cl. 112-228.000.

Singer, Hans: *See—*
Sendl, Ludwig; and Singer, Hans, 4,475,454, Cl. 100-229.00A.

Siol, Werner: *See—*
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; Tilch, Willi; and Siol, Werner, 4,476,182, Cl. 428-265.000.

Sirridge, Henry A.: *See—*
Glaser, Jerry; Sirridge, Henry A.; and Ibach, Ernest J., 4,475,824, Cl. 384-306.000.

Skilling, John B.: *See—*
Paton, H. Neil; Skilling, John B.; Sandys, Jeffery P.; and Gylland, E. Frederick, Jr., 4,475,722, Cl. 267-9.00C.

SKW Trostberg Aktiengesellschaft: *See—*
Michaud, Horst; Raveling, Hermann; and Seeholzer, Josef, 4,475,939, Cl. 71-28.000.

Slegeir, William A.: *See—*
Sapienza, Richard S.; Slegeir, William A.; and Foran, Michael T., 4,476,103, Cl. 423-417.000.

Sloane, Glenn L. Holder for a syringe and an ampoule. 4,475,915, Cl. 604-414.000.

Smart, Roderick M.: *See—*
Aston, Geoffrey W.; and Smart, Roderick M., 4,475,936, Cl. 65-142.000.

Smith, Blaine M.; and Taylor, James A., to Jonathan Ehrenreich, Ehrenreich Electronics. Sound actuated light switch. 4,476,554, Cl. 367-197.000.

Smith, Cecil D. Easy carry-easy access golf marker and tee caddy. 4,475,676, Cl. 224-247.000.

Smith, David A., to General Acoustics Corporation. Axial fan and noise abatement apparatus combination. 4,475,867, Cl. 415-119.000.

Smith, Edgar C.; and Campbell, James B., to Three Dimensional Photography Corporation, The. Camera for stereoscopic photography. 4,475,798, Cl. 354-114.000.

Smith, Fred L., III: *See—*
Tjornehoj, David J.; Dick, Donald E.; Kiefer, Richard E.; and Smith, Fred L., III, 4,475,398, Cl. 73-599.000.

Smith, Jimmy B., to Peabody Development Company. Stable activated carbon process using a moving grate stoker furnace. 4,475,986, Cl. 201-7.000.

Smith, Michael J.: *See—*
Markin, Charles; Book, Ronald J.; Smith, Michael J.; and Wiacek, Marian, 4,476,200, Cl. 429-56.000.

Smith, Richard B. Mechanism for positioning workpieces. 4,475,726, Cl. 269-41.000.

Smith, Terry W.: *See—*
Tanner, Walter K., Jr.; Brinkmann, Frank A.; and Smith, Terry W., 4,475,368, Cl. 72-10.000.

Smithkline Beckman Corporation: *See—*
Taylor, Dean P., 4,476,227, Cl. 435-317.000.

Smolka, Heinz G.: *See—*
Kittscher, Peter; Schumann, Klaus; Altenschopfer, Theodor; Haumann, Wolfgang; and Smolka, Heinz G., 4,475,663, Cl. 220-87.000.

SMS Schloemann Siemag Aktiengesellschaft: *See—*
Ostlinning, Gunter; Roever, Otto A.; Wintzen, Gunther; and Zilges, Franz J., 4,475,372, Cl. 72-255.000.

Smuda, Peter; Wernecke, Rainer; and Werner, Klaus, to Brennstoffinstitut Freiberg. System for sealing shafts against solid containing gaseous media. 4,475,735, Cl. 277-3.000.

SNECMA: *See—*
Corral, Jose R., 4,476,540, Cl. 364-851.000.

Snyder, Clair W., Jr.: *See—*
Asick, John C.; Douty, George H.; Goodman, Joseph R.; Jones, Kermit M., Jr.; Landis, John M.; Snyder, Clair W., Jr.; Woratyla, John A.; and Zell, Dale R., 4,475,781, Cl. 339-17.0LM.

Snyder General Corporation: *See—*
Hoeffken, Russell W., 4,475,585, Cl. 165-134.00R.

Sociedad Espanola de Especialidades Farmaco-Terapeuticas S.A.: *See—*
Andreoli, Romeo R.; and Cirera, Xavier D., 4,476,319, Cl. 560-62.000.

Societe Anonyme DBA: *See—*
Gerard, Jean-Louis; and Le Marchand, Claude, 4,475,633, Cl. 188-73.450.
Meynier, Guy, 4,475,337, Cl. 60-547.100.

Societe anonyme dite: Tissmetal Lionel-Dupont: *See—*
Martin, Gerard, 4,475,701, Cl. 244-118.600.

Societe Chimique des Charbonnages-CdF CHIMIE: *See—*
Bujadoux, Karel, 4,476,288, Cl. 526-124.000.

Societe dite: Tractel, S.A.: *See—*
Desplats, Andre; and Klabunde, Hans, 4,475,717, Cl. 254-264.000.

Societe Nationale de Liamiante: *See—*
Chevalier-Bultel, Jean-Pierre; and Drolet, Jean-Pierre, 4,476,235, Cl. 501-112.000.

Societe Nationale Elf Aquitaine: *See—*
Ayglon, Daniel; and Hardy, Marie C., 4,475,941, Cl. 71-67.000.

Soelberg, Kenneth B.: *See—*
Stark, Marvin M.; Soelberg, Kenneth B.; Pelzner, Roger B.; and Bogdan, Mark S., 4,475,370, Cl. 72-53.000.

Soldek Limited: *See—*
O'Regan, Allan; and McGloughlin, Denis, 4,475,327, Cl. 52-404.000.

Solhjell, Erik, to Tandberg Data A/S. Method for the recognition of an edge of a magnetic medium and a device for implementation of the method. 4,476,503, Cl. 360-75.000.

Solmat Systems, Ltd.: *See—*
Assaf, Gad, 4,475,535, Cl. 126-415.000.

Sonder, Richard: *See—*
Russo, Joseph L.; Sonder, Richard; and Schwartz, Wesley W., 4,475,322, Cl. 52-27.000.

Sony Corporation: *See—*
Hayakawa, Masatoshi; Aso, Koichi; Uedaira, Satoru; Ochiai, Yoshitaka; Matsuda, Hideki; Hotai, Kazuhide; and Hayashi, Kazuhiko, 4,475,962, Cl. 148-108.000.
Joichi, Yoshiro; and Ohki, Hiroshi, 4,476,555, Cl. 369-44.000.
Koizumi, Akio; and Yamagishi, Hiroshi, 4,476,436, Cl. 330-10.000.
Sako, Yoichiro; and Odaka, Kentaro, 4,476,562, Cl. 371-39.000.

Sopher, David W.: *See—*
Chum, Helena L.; and Sopher, David W., 4,476,025, Cl. 210-638.000.

South Park Corporation: *See—*
Hintz, Curtis M., 4,475,691, Cl. 239-587.000.

Southwest Research Institute: *See—*
Ludwig, Allen C.; Wolter, Larry W.; and Frazier, Henry F., 4,475,953, Cl. 106-287.240.

Souza, Alexander. Rust and scale arrester. 4,476,021, Cl. 210-307.000.

Spalinger, Hugo: *See—*
Borer, Werner; Lukacs, Janos; and Spalinger, Hugo, 4,476,071, Cl. 264-15.000.

Specified Ceiling Systems: *See—*
McCall, Francis L., 4,475,446, Cl. 98-40.00D.

Spencer, Arthur T.: *See—*
Chu, Shaw C.; and Spencer, Arthur T., 4,476,262, Cl. 523-412.000.

Sperry Corporation: *See—*
Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., 4,475,561, Cl. 130-27.00R.

Spiegel, Erwin: *See—*
Vogt, Hans; Kloppe, Herbert; and Spiegel, Erwin, 4,475,765, Cl. 296-210.000.

Spieler, Richard: *See—*
Czulak, Jozef; and Spieler, Richard, 4,476,143, Cl. 426-40.000.

Spire Corporation: *See—*
Little, Roger G., 4,475,790, Cl. 350-96.210.

Spires, Dewayne A.: *See—*
Aull, Denis W.; and Spires, Dewayne A., 4,476,350, Cl. 179-70.000.

Spisak, Anne: *See—*
Frank, Carl A., 4,475,364, Cl. 70-139.000.

Spittle Industries, Inc.: *See—*
Spittle, Kevin S., 4,476,185, Cl. 428-290.000.

Spittle, Kevin S., to Spittle Industries, Inc. Blowable glass fiber thermal insulation product. 4,476,185, Cl. 428-290.000.

Sprague Electric Company: *See—*
Fresia, E. James, 4,476,517, Cl. 361-327.000.

Spreading Machine Exchange, Inc.: *See—*
Costigan, Conrad A., 4,475,729, Cl. 270-31.000.

Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., to International Flavors & Fragrances Inc. Mono-oxomethyl substituted polyhydrodimethanonaphthalene derivatives, organoleptic uses thereof and processes for preparing same. 4,476,042, Cl. 252-522.00R.

Spring, Thomas G.: *See—*
Huchzermeier, Roy F.; and Spring, Thomas G., 4,476,228, Cl. 436-500.000.

Square D Company: *See—*
Russo, Joseph L.; Sonder, Richard; and Schwartz, Wesley W., 4,475,322, Cl. 52-27.000.

Stahly, Barbara C.: *See—*
Stahly, G. Patrick; and Stahly, Barbara C., 4,476,315, Cl. 560-20.000.

Stahly, G. Patrick; and Stahly, Barbara C., to Ethyl Corporation. Nucleophilic substitution process. 4,476,315, Cl. 560-20.000.

Staisch, Diether: *See—*
Bartscher, Peter; Meyer, Harald; and Staisch, Diether, 4,475,773, Cl. 303-6.00A.

Standard Oil Company, The: *See—*
Brown, Lewis R., 4,475,590, Cl. 166-246.000.
Giddings, Brandford E.; and Jorkasky, Richard J., II, 4,476,275, Cl. 525-462.000.
Pesa, Frederick A.; and Graham, Anne M., 4,476,247, Cl. 502-325.000.
Poppe, Wassily; and Chen, Yu-Tsai, 4,476,280, Cl. 524-606.000.

Standard Oil Company (Indiana): *See—*
Fields, Ellis K.; and Clarke, William C., 4,475,597, Cl. 166-305.00R.
Puskas, Imre; and Cerefice, Steven A., 4,476,242, Cl. 502-185.000.
Stephens, James R., 4,476,295, Cl. 528-322.000.
Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., 4,476,011, Cl. 208-111.000.
York, Earl D.; and Porter, Darrell D., 4,475,965, Cl. 149-21.000.

Stanek, Gary C., to Massey-Ferguson Inc. Power steering system. 4,475,615, Cl. 180-160.000.

Stanley, Mary M.: *See—*
Adair, Paul C.; Burkholder, Amy L.; Duda, Homer G.; Wright, Richard F.; and Stanley, Mary M., 4,476,213, Cl. 430-229.000.

Stanley Works, The: *See—*
Suska, Charles R., 4,475,266, Cl. 16-273.000.

Stant Inc.: *See—*
Harris, Robert S., 4,475,389, Cl. 73-304.00R.
Harris, Robert S., 4,476,028, Cl. 210-774.000.

Stapleton, Del G.: *See*—
Foster, Bryan D.; and Stapleton, Del G., 4,475,887, Cl. 432-258.000.
Stark, Forest G., to AVM Corporation. Drawer suspension system. 4,475,778, Cl. 312-330.00R.
Stark, Hans: *See*—
Pforr, Gerhard; Appl, Max; Voelkl, Erfried; Stark, Hans; and Peschau, Gerhard, 4,475,749, Cl. 285-47.000.
Stark, Marvin M.; Soelberg, Kenneth B.; Pelzner, Roger B.; and Bogdan, Mark S., to Marvin M. Stark Research Foundation. Device for treating dental castings. 4,475,370, Cl. 72-53.000.
Starkey, David T., to Norlin Industries, Inc. Frequency independent ramp generator. 4,475,427, Cl. 84-1.010.
Starkweather, Gary K., to Xerox Corporation. Single facet wobble free scanner. 4,475,787, Cl. 350-6.400.
Staten, Harold D., to Donaldson, Helen. Snap ring removal tool. 4,475,276, Cl. 29-229.000.
Stauffer Chemical Company: *See*—
Felix, Raymond A., 4,476,063, Cl. 260-940.000.
Via, Francis A., 4,475,999, Cl. 204-159.230.
Stay Fresh, Inc.: *See*—
Aversano, Ralph W., 4,476,112, Cl. 424-127.000.
Steag Aktiengesellschaft: *See*—
Adrian, Fritz; and Dankow, Boris, 4,475,472, Cl. 110-347.000.
Steenhuisen, Johannes E.; and van Dijk, Jan, to Duphar International Research B.V. Disposable hypodermic syringe. 4,475,903, Cl. 604-111.000.
Stein, James B.: *See*—
Blau, Jonathan S.; and Stein, James B., 4,476,537, Cl. 364-748.000.
Stemmler, Bruno: *See*—
Muhlratzer, August; Stemmler, Bruno; and Zeilinger, Hans, 4,475,958, Cl. 148-6.350.
Stengel, Paul G. Composting machine. 4,475,450, Cl. 100-100.000.
Stenger, Antoine: *See*—
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,476,061, Cl. 260-501.170.
Stenstrom, Lennart, to ASEA Aktiebolag. Surge arrester. 4,476,513, Cl. 361-127.000.
Stepanov, Jury N.: *See*—
Yakubovich, Solomon L.; Kotsen, Marat E.; Golubnichy, Vladislav V.; Gerling, Voldemar E.; and Stepanov, Jury N., 4,476,388, Cl. 250-361.00R.
Stephens, Glen: *See*—
Flaim, Thomas A.; Stephens, Glen; and Miller, Edwin J., 4,475,634, Cl. 188-218.00A.
Stephens, James R., to Standard Oil Company (Indiana). Poly-imide-oxadiazole soluble in m-cresol. 4,476,295, Cl. 528-322.000.
Sterling Faucet Co.: *See*—
Hindman, Clarence B., 4,475,573, Cl. 137-625.410.
Sterling, Rosstain F.: *See*—
Wong, Louis F.; Sterling, Rosstain F.; and Borcher, Thomas A., Sr., 4,476,046, Cl. 252-550.000.
Stewart, James D.: *See*—
Heiskell, Ronald E.; Kirkpatrick, Gregg R.; Newman, Garry F.; and Stewart, James D., 4,475,714, Cl. 254-89.00H.
Stickels, Charles A.: *See*—
Kovacs, Bela V.; Nowicki, Roman M.; and Stickels, Charles A., 4,475,956, Cl. 148-3.000.
Stiftelsen Institutet For Mikrovagsteknik Vid Tekniska Hogskolan i Stockholm: *See*—
Berggren, Benny; and Hassler, Yngve, 4,476,363, Cl. 219-10.55A.
Stockwell, Claude L., to Secretary of State for United Kingdom Atomic Energy Authority. Separation. 4,475,292, Cl. 34-10.000.
Stoffa, Paul L.: *See*—
Ziolkowski, Antoni M.; and Stoffa, Paul L., 4,476,550, Cl. 367-21.000.
Stone, W. Porter, to Piezo Electric Products, Inc. Self-calibrating thermometer. 4,475,823, Cl. 374-1.000.
Storage Technology Corporation: *See*—
Dodd, P. David, 4,476,526, Cl. 364-200.000.
Stotts, Larry B.: *See*—
Mooradian, Gregory C.; and Stotts, Larry B., 4,475,816, Cl. 356-437.000.
Stoyanov, Stoyan M.: *See*—
Rashev, Tzolo V.; Valkov, Lyudmil K.; Rasheva, Ivanka A.; Stoyanov, Stoyan M.; Kossev, Danail K.; and Lambev, Yordan G., 4,476,565, Cl. 373-50.000.
Strametz, Helmut: *See*—
Kablitz, Hans-Jurgen; and Strametz, Helmut, 4,476,297, Cl. 528-486.000.
Strandberg, Donald G., to Park-Ohio Industries, Inc. Sucker rod fitting. 4,475,839, Cl. 403-2.000.
Strauss, Johannes K.: *See*—
von Hagen, Wolf R.; and Strauss, Johannes K., 4,475,474, Cl. 112-121.260.
Strauss, Karl-Peter; and Kasser, Jurgen, to Blaupunkt-Werke GmbH. Mobile broadcast receiver with channels selectable according to reception location. 4,476,582, Cl. 455-166.000.
Strengowski, Stanley S.: *See*—
Malmborg, Floyd L.; and Strengowski, Stanley S., 4,476,357, Cl. 200-51.090.
Strick, Leonard. Articulated truck/trailer combination. 4,475,740, Cl. 280-403.000.
Stroh, Paul F. String-clamping means. 4,475,432, Cl. 84-314.00N.
Strolin-Benedetti, Margherita: *See*—
Dostert, Philippe L.; Lacour, Alain P.; Langlois, Michel; and Strolin-Benedetti, Margherita, 4,476,136, Cl. 424-272.000.
Strubbe, Gilbert J. I.: *See*—
Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., 4,475,561, Cl. 130-27.00R.
Struven, Warren C., to United States of America, Energy. Radio frequency communication system utilizing radiating transmission lines. 4,476,574, Cl. 455-55.000.
Stultz, Jeffrey H.: *See*—
Harper, Stephen M.; and Stultz, Jeffrey H., 4,476,069, Cl. 261-97.000.
Stumpf, George R., Jr.: *See*—
Mittelstadt, Robert F.; and Stumpf, George R., Jr., 4,475,976, Cl. 156-286.000.
Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See*—
Martin, Hans; and Scharpf, Kurt, 4,475,584, Cl. 165-76.000.
Suefuji, Kazutaka; Oguni, Kensaku; Kotani, Sumihisa; and Tojo, Kenji, to Hitachi, Ltd. Refrigeration system incorporating scroll type compressor. 4,475,360, Cl. 62-324.100.
Suetterlin, Norbert: *See*—
Link, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; Tilch, Willi; and Siol, Werner, 4,476,182, Cl. 428-265.000.
Sugahara, Eisuke, to Nippon Piston Ring Co., Ltd. Valve mechanism. 4,475,496, Cl. 123-198.00F.
Sugihara, Atsushi: *See*—
Yamawaki, Satoshi; Sugihara, Atsushi; Kobayashi, Yasushi; Ishida, Hiroshi; Kuramasu, Yukio; and Gotoh, Ichisei, 4,475,960, Cl. 148-26.000.
Sugimoto, Kazuo; and Terauchi, Kiyoshi, to Sanden Corporation. Scroll type fluid displacement apparatus with balance weight. 4,475,875, Cl. 418-55.000.
Sugimoto, Ryuichi: *See*—
Yokota, Kenji; Kusano, Hiroshi; and Sugimoto, Ryuichi, 4,476,304, Cl. 544-244.000.
Sugino Cycle Industries, Ltd.: *See*—
Sugino, Yasushi, 4,475,894, Cl. 474-144.000.
Sugino, Yasushi, to Sugino Cycle Industries, Ltd. Front sprocket wheel having chain guard for bicycles. 4,475,894, Cl. 474-144.000.
Sugishita, Kaneo; and Kawahara, Katsuyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for controlling the operation of a water turbine or a pump turbine and a method thereof. 4,475,865, Cl. 415-36.000.
Sugita, Yutaka: *See*—
Imura, Ryo; Ikeda, Tadashi; Ohta, Norio; Takeuchi, Teruaki; and Sugita, Yutaka, 4,476,152, Cl. 427-38.000.
Sugiura, Yoichi: *See*—
Kobayashi, Nobuyuki; Itoh, Hiroshi; and Sugiura, Yoichi, 4,475,517, Cl. 123-489.000.
Sugiyama, Sakae: *See*—
Takeda, Hiroyuki; Kudo, Kunio; Kobayashi, Izumi; Ojiri, Yohsuke; Oda, Mitsuyuki; and Sugiyama, Sakae, 4,475,394, Cl. 73-598.000.
Sullivan, John V.: *See*—
Gough, David S.; and Sullivan, John V., 4,476,413, Cl. 313-550.000.
Sullivan, Leroy J., to Chartered Industries of Singapore Private Limited. Sear actuator. 4,475,437, Cl. 89-148.000.
Sullivan, Leroy J., to Chartered Industries of Singapore Private Ltd. Gas operated, automatic or semi-automatic guns. 4,475,438, Cl. 89-191.00R.
Sulzer Brothers Limited: *See*—
Jankovsky, Frantisek, 4,475,575, Cl. 139-439.000.
Sumioka, Atsushi: *See*—
Mitani, Eisuke; Okamoto, Yukio; and Sumioka, Atsushi, 4,476,466, Cl. 340-805.000.
Sumitomo Electric Industries, Ltd.: *See*—
Imai, Takeshi; Kako, Naohiro; Asano, Nobuyuki; Masuda, Shigeo; and Katsuda, Morihiko, 4,476,192, Cl. 428-391.000.
Sunago, Katsuyoshi; and Takenaka, Shinya, 4,476,512, Cl. 361-103.000.
Tanaka, Chihaya; Iwabuchi, Kazuo; Kakii, Toshiaki; and Toda, Yuichi, 4,475,935, Cl. 65-3.410.
Sumitomo Metal Industries, Ltd.: *See*—
Kakihara, Moriyuki, 4,476,370, Cl. 219-78.160.
Matsuda, Yukio; and Ueno, Tsutomu, 4,475,369, Cl. 72-38.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Kawakami, Masafumi, 4,476,455, Cl. 340-58.000.
Sun, Szu C.: *See*—
Terwilliger, Curtis G.; McKeefery, W. James; Sun, Szu C.; and Melen, Roger D., 4,476,467, Cl. 340-825.500.
Sunago, Katsuyoshi; and Takenaka, Shinya, to Sumitomo Electric Industries, Ltd. Monitor device for laser systems transmitting laser light through optical fibers. 4,476,512, Cl. 361-103.000.
Susa, Ermanno: *See*—
Mayr, Adolfo; Galli, Paolo; Susa, Ermanno; Di Drusco, Giovanni; and Giachetti, Ettore, 4,476,289, Cl. 526-125.000.
Suska, Charles R., to Stanley Works, The. Non-handed two knuckle hinge. 4,475,266, Cl. 16-273.000.
Suzuki, Haruo: *See*—
Tsumaki, Masahiro; Fujii, Toshihiko; Kamiya, Hideaki; Suzuki, Haruo; and Goto, Yoshihiro, 4,475,462, Cl. 105-149.000.
Suzuki, Hidetoshi: *See*—
Ayata, Naoki; Koumura, Noboru; Saito, Seiji; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Kazuma, Koji, 4,476,486, Cl. 358-78.000.
Suzuki, Hitoshi; and Hara, Kazuo, to Fuji Jukogyo Kabushiki Kaisha. Air-fuel ratio control system. 4,475,512, Cl. 123-440.000.
Suzuki, Kazuyasu, to Casio Computer Co., Ltd. Electronic equipment with tone generating function. 4,475,429, Cl. 84-1.190.

Suzuki, Masatoshi: *See*—
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Shibata, Masahiro; Saito, Toshitaka; and Yamakawa, Mitihiro, 4,476,008, Cl. 204-425.000.

Suzuki, Yasuo: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,476,127, Cl. 424-250.000.

Swartzlander, Amy B.: *See*—
Camp, Floyd E.; and Swartzlander, Amy B., 4,476,099, Cl. 423-10.000.

Swihart, Terence J.: *See*—
Blizzard, John D.; and Swihart, Terence J., 4,476,188, Cl. 428-332.000.

Swisher, James A. Electrical box lock assembly. 4,475,365, Cl. 70-159.000.

Swiss Aluminium Ltd.: *See*—
Borer, Werner; Lukacs, Janos; and Spalinger, Hugo, 4,476,071, Cl. 264-15.000.

Sy, Anita O.; and Cuisia, Dionisio G., to W. R. Grace & Co.; and Dearborn Chemical Co. High temperature dispersant. 4,476,029, Cl. 252-8.50C.

Syntex (U.S.A.) Inc.: *See*—
Anik, Shabbir T., 4,476,116, Cl. 424-177.000.

Syrbius, Gerhard: *See*—
Koch, Klaus; and Syrbius, Gerhard, 4,475,452, Cl. 100-117.000.

T-Bar Incorporated: *See*—
Malmborg, Floyd L.; and Strengowski, Stanley S., 4,476,357, Cl. 200-51.090.

Tabata, Yooichiro: *See*—
Mizuno, Takaji; Segawa, Hirohisa; Ueguri, Shigeo; Tabata, Yooichiro; and Hiramoto, Seigo, 4,476,376, Cl. 219-130.210.

Tabibi, Sohrab: *See*—
Promoli, Johann C.; Guse, Rolf; and Tabibi, Sohrab, 4,475,331, Cl. 57-263.000.

Taisho Pharmaceutical Co., Ltd.: *See*—
Morimoto, Shigeo; Takahashi, Yoko; Watanabe, Yoshiaki; and Omura, Sadafumi, 4,476,298, Cl. 536-7.200.

Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., to Standard Oil Company (Indiana). Catalyst and process for the hydrogenitrogenation and hydrocracking of high-nitrogen feeds. 4,476,011, Cl. 208-111.000.

Takada, Takuzo; and Iizuka, Takao, to Yoshino Kogyosho Co., Ltd. Method of strengthening a neck portion of a bottle-shaped container of biaxially oriented polyethylene terephthalate resin. 4,476,084, Cl. 264-342.00R.

Takahashi, Eiji; and Iwai, Kenji, to Kabushiki Kaisha Kobe Seiko Sho. Method for postweld heat treatment. 4,475,963, Cl. 148-128.000.

Takahashi, Masaaki: *See*—
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,476,328, Cl. 568-775.000.

Takahashi, Masao: *See*—
Nishino, Hiroshi; Ogino, Fumiichi; Masuko, Tetsuo; Goto, Kunio; and Takahashi, Masao, 4,476,169, Cl. 428-34.000.

Takahashi, Teruyuki: *See*—
Kano, Masafumi; Takahashi, Teruyuki; and Igarashi, Hiroshi, 4,476,271, Cl. 524-377.000.

Takahashi, Yoko: *See*—
Morimoto, Shigeo; Takahashi, Yoko; Watanabe, Yoshiaki; and Omura, Sadafumi, 4,476,298, Cl. 536-7.200.

Takamatsu, Masahiro; and Yamada, Masaaki, to Toyota Jidosha Kabushiki Kaisha. Combination meter cover construction. 4,475,614, Cl. 180-90.000.

Takamatsu, Takeshi, deceased; and by Takamatsu, Tokuyuki, legal representative, to Olympus Optical Co., Ltd. Endoscope apparatus. 4,475,540, Cl. 128-6.000.

Takamatsu, Takeshi, deceased; and by Takamatsu, Tokuyuki, legal representative, to Olympus Optical Co., Ltd. Endoscope apparatus. 4,475,541, Cl. 128-6.000.

Takamatsu, Tokuyuki, legal representative: *See*—
Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,475,540, Cl. 128-6.000.
Takamatsu, Takeshi, deceased; and Takamatsu, Tokuyuki, legal representative, 4,475,541, Cl. 128-6.000.

Takase, Hidetomo: *See*—
Ueyama, Akihide; Kumano, Nobuo; and Takase, Hidetomo, 4,476,389, Cl. 250-363.00S.

Takasu, Ryo; and Yazaki, Susumu, to Bridgestone Tire Company Limited. Method and apparatus for measuring width of a selvage rubber portion extending in transversal direction of a coating sheet. 4,475,815, Cl. 356-385.000.

Takeda Chemical Industries, Ltd.: *See*—
Fujino, Masahiko; and Wakimasu, Mitsuhiro, 4,476,051, Cl. 260-112.50R.
Nishino, Hiroshi; Ogino, Fumiichi; Masuko, Tetsuo; Goto, Kunio; and Takahashi, Masao, 4,476,169, Cl. 428-34.000.

Takeda, Hiroyuki; Kudo, Kunio; Kobayashi, Izumi; Ojiri, Yohsuke; Oda, Mitsuyuki; and Sugiyama, Sakae, to Hitachi, Ltd. Ultrasonic method of determining nature of flaws by incremental scanning. 4,475,394, Cl. 73-598.000.

Takei, Sakae: *See*—
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,476,478, Cl. 357-41.000.

Takenaka, Shinji; Nishida, Takeshi; and Kanemoto, Joshiro, to Mitsui Toatsu Chemicals, Inc. Process for preparing mononitrochlorobenzene. 4,476,335, Cl. 568-937.000.

Takenaka, Shinya: *See*—
Sunago, Katsuyoshi; and Takenaka, Shinya, 4,476,512, Cl. 361-103.000.

Takeno, Hidekazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,476,050, Cl. 260-112.50R.

Takeuchi, Hiroshi; and Nishimura, Yoshio, to Kabushiki Kaisha Daikin Seisakusho. Damper disc. 4,475,640, Cl. 192-70.170.

Takeuchi, Keinosuke, to Hakugen Co., Ltd. Fragrance releasing articles. 4,476,171, Cl. 428-38.000.

Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Tobita, Hiroshi; and Tonami, Munehiko, to Hitachi, Ltd. Fused carbonate fuel cell. 4,476,199, Cl. 429-34.000.

Takeuchi, Teruaki: *See*—
Imura, Ryo; Ikeda, Tadashi; Ohta, Norio; Takeuchi, Teruaki; and Sugita, Yutaka, 4,476,152, Cl. 427-38.000.

Takezawa, Kunio: *See*—
Matsumoto, Yoshihiro; Takezawa, Kunio; and Masegi, Ken, 4,476,528, Cl. 364-200.000.

Takizawa, Tozo; and Hatanaka, Koji, to Jidosha Kiki Co., Ltd. Glow plug for use in diesel engine. 4,476,378, Cl. 219-270.000.

Takizawa, Yoshiyuki: *See*—
Watanabe, Kazuo; Kominami, Yasuo; Takizawa, Yoshiyuki; and Haeno, Akira, 4,476,502, Cl. 360-65.000.

Talley, John J.: *See*—
Chambers, Gregory R.; and Talley, John J., 4,476,329, Cl. 568-804.000.

Talley, Paul E.; and Rochford, Harry T., to General Motors Corporation. Decorating coated aluminum for extrusion encapsulation. 4,475,975, Cl. 156-234.000.

Tamagawa, Susumu: *See*—
Sato, Ikuro; Tamagawa, Susumu; and Iwata, Ryuichi, 4,476,471, Cl. 343-779.000.

Tamori, Michitoshi, deceased (by Tamori, Yumi, administrator); Kobayashi, Hideo; Hashimoto, Kazuo; and Kawai, Kazuo, to Kokusai Denshin Denwa Co., Ltd. Transversal type smear-desmear filter. 4,476,539, Cl. 364-825.000.

Tamori, Yumi, administrator: *See*—
Tamori, Michitoshi, deceased; Kobayashi, Hideo; Hashimoto, Kazuo; and Kawai, Kazuo, 4,476,539, Cl. 364-825.000.

Tamura, Kohji: *See*—
Konishi, Katsuo; Kawano, Kanji; Tamura, Kohji; and Abe, Mitsuo, 4,476,509, Cl. 360-119.000.

Tanabe, Yoshiyuki: *See*—
Kashiwaya, Mineo; Tanabe, Yoshiyuki; Yamada, Kinsaku; and Tsuruta, Hisato, 4,475,518, Cl. 123-494.000.

Tanaka, Chihaya; Iwabuchi, Kazuo; Kakii, Toshiaki; and Toda, Yuichi, to Nippon Telegraph & Telephone Public Corporation; and Sumitomo Electric Industries, Ltd. Joining method to obtain elongated coated optical fiber. 4,475,935, Cl. 65-3.410.

Tanaka, Hideo: *See*—
Akada, Mitsuo; Masatomi, Tsunehiko; Shimizu, Yasuo; Torii, Shigeru; and Tanaka, Hideo, 4,475,992, Cl. 204-59.00R.

Tanaka, Kouji; Ikeda, Osamu; and Nakayama, Yoshio, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Automatic continuous tuning control apparatus for a receiver. 4,476,580, Cl. 455-164.000.

Tanaka, Toshiaki; Kawata, Ichiro; Nakagome, Keisuke; and Matsui, Koji, to Nitto Electric Industrial Company, Ltd. Method for production of a fluid separation module. 4,475,973, Cl. 156-184.000.

Tandberg Data A/S: *See*—
Solhjell, Erik, 4,476,503, Cl. 360-75.000.

Tandon Corporation: *See*—
Bygdnes, Perry A., 4,476,404, Cl. 310-27.000.

Tani, Isamu, to Kabushiki Kaisha Nagoya Boki Seisakusho. Wire stripper. 4,475,418, Cl. 81-9.50A.

Taniguchi, Hideo: *See*—
Tatsumi, Yutaka; and Taniguchi, Hideo, 4,476,377, Cl. 219-216.000.

Taniguchi, Yoshisada: *See*—
Nagami, Hayashi; Taniguchi, Yoshisada; Otsu, Shinpei; Fujimura, Toshio; and Shimizu, Keizo, 4,476,556, Cl. 369-258.000.

Tanioka, Akira: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.

Tanner, Walter K., Jr.; Brinkmann, Frank A.; and Smith, Terry W., to Draft Systems, Inc. Method and apparatus for restraightening container support skirts. 4,475,368, Cl. 72-10.000.

Tao, Thomas M., to James River-Dixie/Northern, Inc. Process for manufacturing embossed nonwoven fibrous products. 4,476,078, Cl. 264-119.000.

Tarjan, Peter P.; and Hess, Stanley R., to Cordis Corporation. Temporary pacing lead assembly. 4,475,560, Cl. 128-785.000.

Tash, George. Pipe flushing device. 4,475,255, Cl. 4-256.000.

Tateyama, Yoshihiro: *See*—
Kitahara, Seiji; Mogi, Keitaro; Shimada, Thoziro; Noda, Fumio; and Tateyama, Yoshihiro, 4,476,144, Cl. 426-46.000.

Tatsumi, Yutaka; and Taniguchi, Hideo, to Rohm Company Limited. Thermal printing head. 4,476,377, Cl. 219-216.000.

Tausend, Erich, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Clutch assembly for gear transmission. 4,475,639, Cl. 192-53.00G.

Tavana, Benito J.: *See*—
Amara, Louis J.; Paoletti, Peitro; and Tavana, Benito J., 4,475,952, Cl. 106-94.000.

Tawada, Yoshihisa; and Tsuge, Kazunori, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Photovoltaic device. 4,476,346, Cl. 136-249.000.

Taya, Shunroku; and Fujiwara, Mituo, to Hitachi, Ltd. Ion implantation apparatus. 4,476,393, Cl. 250-492.200.

Taylor, Dean P., to Smithkline Beckman Corporation. Cosmid cloning vectors. 4,476,227, Cl. 435-317.000.

Taylor, James A.: *See*—
Smith, Blaine M.; and Taylor, James A., 4,476,554, Cl. 367-197.000.

Taylor, Lynn J.: *See*—
Bailey, William J.; and Taylor, Lynn J., 4,476,255, Cl. 523-125.000.

TBA Industrial Products Limited: *See*—
Munro, Alexander; and Entwisle, Lester, 4,475,693, Cl. 242-42.000.

Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH: *See*—
Baackmann, Dirk; Hecht, Georg; Schlagenhaft, Johann; and Schnell, Karl, 4,476,561, Cl. 371-25.000.

Teepak, Inc.: *See*—
Martinek, Thomas W., 4,475,895, Cl. 493-259.000.

Teijin Limited: *See*—
Kimura, Akio; Wada, Osamu; Iohara, Kohichi; and Matsui, Michikage, 4,475,330, Cl. 57-245.000.

Tektronix, Inc.: *See*—
Olson, David H., 4,476,432, Cl. 324-121.00R.

Teledyne Industries, Inc.: *See*—
Hawk, Charles E.; and Whitcomb, Jonathan T., 4,475,387, Cl. 73-202.000.

Telefonaktiebolaget L M Ericsson: *See*—
Toomingas, Illar, 4,475,856, Cl. 411-33.000.

Telmec Co., Ltd.: *See*—
Asakawa, Teruo, 4,476,420, Cl. 318-608.000.

Temco Home Health Care Products, Inc.: *See*—
Hatala, John, 4,475,256, Cl. 4-562.000.

Tenex Corporation: *See*—
Carrera, Armando, 4,476,174, Cl. 428-58.000.

Tennison, Stephen R.: *See*—
Joyner, Richard W.; McCarroll, John J.; and Tennison, Stephen R., 4,476,250, Cl. 518-715.000.

Terada, Kazuhiro: *See*—
Honda, Tadatoshi; Matsuda, Fujio; Kiyoura, Tadamitsu; and Terada, Kazuhiro, 4,476,310, Cl. 548-508.000.

Teradyne, Inc.: *See*—
Johnson, Lennart B., 4,475,284, Cl. 29-739.000.

Teramachi, Hiroshi. Linear slide bearing. 4,475,776, Cl. 308-6.00C.

Terauchi, Kiyoshi: *See*—
Sugimoto, Kazuo; and Terauchi, Kiyoshi, 4,475,875, Cl. 418-55.000.

Terkoski, Frank J.: *See*—
Licata, Joseph P.; Lehnhoff, Richard N.; and Terkoski, Frank J., 4,476,416, Cl. 318-283.000.

Terwilliger, Curtis G.; McKeefery, W. James; Sun, Szu C.; and Melen, Roger D., to Cromemco Inc. Random entry intercomputer network with collision prevention. 4,476,467, Cl. 340-825.500.

Tetra Pak International AB: *See*—
Andersson, Par; and Viberg, Rolf, 4,475,655, Cl. 206-624.000.

Texaco Canada Inc.: *See*—
Pachovsky, Roman A., 4,475,592, Cl. 166-272.000.

Texaco Inc.: *See*—
Kuhlmann, Erven J.; Guptill, Richard P.; Jung, Dick Y.; and Zang, Hyung K., 4,476,009, Cl. 208-8.0LE.
Lin, Jiang-Jen; and Knifton, John F., 4,476,326, Cl. 568-487.000.
Reinhard, Russell R.; Dorawala, Tansukhlal G.; and Kerr, Edwin R., 4,476,339, Cl. 585-379.000.

Texas Instruments Incorporated: *See*—
Boone, Gary W.; and Cochran, Michael J., 4,476,541, Cl. 364-900.000.
D'Entremont, John R., 4,476,452, Cl. 337-102.000.
Domogalla, John C., 4,476,456, Cl. 340-347.0AD.
Ford, Eric H., 4,475,793, Cl. 350-172.000.
Scott, David B.; Davies, Roderick D.; and See, Yee-Chaung, 4,476,482, Cl. 357-71.000.

Th. Goldschmidt AG: *See*—
Esselborn, Eberhard; and Fock, Jurgen, 4,476,252, Cl. 521-172.000.
Fock, Jurgen; and Fink, Hans-Ferdi, 4,476,038, Cl. 252-358.000.
Koerner, Gotz; Nickel, Friedhelm; Rott, Hans; and Schmidt, Gunter, 4,476,282, Cl. 524-837.000.

Thaler, Michael R., to Image Communications Inc. Linear motor facsimile machine. 4,476,496, Cl. 358-286.000.

Thatcher, Richard E.; Odom, Horace L.; and Edwards, Ronald L., to Philip Morris Incorporated. Method and apparatus for separating tobacco mixture into lighter and heavier fractions. 4,475,562, Cl. 131-110.000.

Thebrin, Axel I.: *See*—
Hellsten, Karl M. E.; Emanuelsson, Jan G.; Wahlen, Svante L.; and Thebrin, Axel I., 4,476,323, Cl. 564-294.000.

Thelen, Werner: *See*—
Schulz, Joachim; and Thelen, Werner, 4,475,687, Cl. 237-12.30A.

Thermostat- und Schaltgeratebau GmbH & Co.: *See*—
Hollweck, Walter, 4,476,453, Cl. 337-361.000.

Theurer, Walter C., to Eaton Corporation. Terminal seal for electric switch. 4,476,360, Cl. 200-302.100.

Thijssen, Henricus A. C.; and Van der Malen, Bernardus G. M., to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijn-Theehandel B.V. Continuous packed bed wash column. 4,475,355, Cl. 62-123.000.

Thilow, Alfred: *See*—
Ziegler, Gerhard; and Thilow, Alfred, 4,475,995, Cl. 204-129.200.

Thompson, Ralph J.: *See*—
Loshing, Clement T.; and Thompson, Ralph J., 4,476,535, Cl. 364-480.000.

Thomson, Benjamin M., to General Electric Company. Adjustable dual node support assembly for washing machine. 4,475,363, Cl. 68-23.300.

Thomson-CSF: *See*—
Gaudin, Daniel; and Le Gars, Philippe, 4,476,578, Cl. 455-115.000.

Thornberry, William E.: *See*—
Schirmer, Robert M.; and Thornberry, William E., 4,475,883, Cl. 431-158.000.

Thorngurgh, Jay W.: *See*—
Cook, Thomas J., Jr.; and Thorngurgh, Jay W., 4,475,737, Cl. 277-182.000.

Three Dimensional Photography Corporation, The: *See*—
Smith, Edgar C.; and Campbell, James B., 4,475,798, Cl. 354-114.000.

Throckmorton, Jerome P.: *See*—
Berdinner, Edward J., Jr.; and Throckmorton, Jerome P., 4,475,478, Cl. 118-413.000.

Thronberens, Werner: *See*—
Kleinloh, Werner; and Thronberens, Werner, 4,475,985, Cl. 162-219.000.

Tilch, Willi: *See*—
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; Tilch, Willi; and Siol, Werner, 4,476,182, Cl. 428-265.000.

Tilly, Lynn K.; and Schwartz, Richard G., to AMSTED Industries Incorporated. Single axle truck transom assembly. 4,475,463, Cl. 105-208.000.

Timex Corporation: *See*—
Leibowitz, Marshall; Crandall, Richard; and Faughnan, Brian, 4,475,795, Cl. 350-357.000.

Timex Mecial Products Corporation: *See*—
Schwarzschild, Jack, 4,475,610, Cl. 177-211.000.

Tjornehoj, David J.; Dick, Donald E.; Kiefer, Richard E.; and Smith, Fred L., III, to Armco Inc. Successive approximation envelope detection for estimating the amplitude of a plurality of successively occurring electrical pulses. 4,475,398, Cl. 73-599.000.

TMC Corporation: *See*—
Bauer, Helmut; and Krob, Erwin, 4,475,742, Cl. 280-632.000.
Wittmann, Heinz, 4,475,743, Cl. 280-632.000.

Tobery, Edward W.: *See*—
Mumford, Stephen E.; and Tobery, Edward W., 4,475,344, Cl. 60-757.000.

Tobey, William H.: *See*—
Schwartzberg, Fred R.; and Tobey, William H., 4,475,323, Cl. 52-111.000.

Tobias, Eric, to Amdahl Corporation. Method for high resolution lithography. 4,476,216, Cl. 430-296.000.

Tobishi Pharmaceutical Co., Ltd.: *See*—
Itokawa, Hideji, 4,476,299, Cl. 536-174.000.

Tobita, Hiroshi: *See*—
Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Tobita, Hiroshi; and Tonami, Munehiko, 4,476,199, Cl. 429-34.000.

Toda, Yuichi: *See*—
Tanaka, Chihaya; Iwabuchi, Kazuo; Kakii, Toshiaki; and Toda, Yuichi, 4,475,935, Cl. 65-3.410.

Tojiki, Hitomi: *See*—
Iwasawa, Teruo; and Tojiki, Hitomi, 4,476,428, Cl. 323-314.000.

Tojo, Kenji: *See*—
Suefuji, Kazutaka; Oguni, Kensaku; Kotani, Sumihisa; and Tojo, Kenji, 4,475,360, Cl. 62-324.100.

Tokan Kogyo Co. Ltd.: *See*—
Komoda, Hirohisa; and Ishihara, Masatomo, 4,476,080, Cl. 264-176.00R.

Tokarzewski, Richard J.: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,476,042, Cl. 252-522.00R.

Tokinaga, Daizo; Kobayashi, Teruaki; Katori, Akiko; and Karasawa, Yoshiharu, to Hitachi, Ltd. Urease-immobilized urea electrode and process for preparing the same. 4,476,005, Cl. 204-403.000.

Tokuda, Hiroshi: *See*—
Sakano, Isao; Miyahara, Shiyoichiro; Yamada, Yoshitsugu; Okazaki, Yutaka; Tokuda, Hiroshi; Awaya, Akira; and Nakano, Takuo, 4,476,128, Cl. 424-250.000.

Tokumo, Akio; and Kato, Masayuki, to Pioneer Electronic Corporation. Automatic sound volume control device. 4,476,571, Cl. 381-57.000.

Tokura, Norihito: *See*—
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, 4,475,388, Cl. 73-204.000.

Tokyo Sanyo Electric Co., Ltd.: *See*—
Tanaka, Kouji; Ikeda, Osamu; and Nakayama, Yoshio, 4,476,580, Cl. 455-164.000.

Tokyo Shibaura Denki K.K.: *See*—
Nakamori, Yutori; Matsumura, Tsuyoshi; and Kubota, Takeshi, 4,476,098, Cl. 422-140.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ariizumi, Syoji; Fukatsu, Yasushi; and Masuoka, Fujio, 4,475,964, Cl. 148-187.000.
Gomi, Hiroshi, 4,476,443, Cl. 330-288.000.
Hanawa, Masatoshi, 4,476,390, Cl. 250-385.000.
Hayase, Shuzi; and Onishi, Yasunobu, 4,476,290, Cl. 528-13.000.
Iesaka, Susumu; and Yakushizi, Shigenori, 4,476,154, Cl. 427-53.100.

Iesaka, Susumu; and Yakushiji, Shigenori, 4,476,481, Cl. 357-58.000.
Masaki, Nobuo; and Yoshida, Tetsuo, 4,476,361, Cl. 200-305.000.
Matsumoto, Yoshihiro; Takezawa, Kunio; and Masegi, Ken, 4,476,528, Cl. 364-200.000.
Mizuno, Saburo; Kozawa, Yutaka; and Ogata, Tosikazu, 4,475,589, Cl. 165-166.000.
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,476,478, Cl. 357-41.000.
Ogo, Yoshimasa, 4,476,569, Cl. 378-175.000.
Saito, Shozo, 4,476,479, Cl. 357-42.000.
Sano, Hideki, 4,475,359, Cl. 62-272.000.
Shinozaki, Satoshi, 4,476,157, Cl. 427-84.000.
Sugishita, Kaneo; and Kawahara, Katsuyuki, 4,475,865, Cl. 415-36.000.
Uchino, Yasuhito; and Miyajima, Hisashi, 4,476,354, Cl. 179-189.00R.
Ueyama, Akihide; Kumano, Nobuo; and Takase, Hidetomo, 4,476,389, Cl. 250-363.00S.

Tomassini, Maurizio; Penco, Eugenio; and Tranquilli, Angelo, to Selenia, Industrie Elettroniche Associate, S.p.A. Coupling between laser and optical fiber. 4,475,788, Cl. 350-96.200.

Tonami, Munehiko: *See*—
Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Tobita, Hiroshi; and Tonami, Munehiko, 4,476,199, Cl. 429-34.000.

Toner, John L.; Daniel, Daniel S.; and Geer, Susan M., to Eastman Kodak Company. Hemispherands and sodium-selective compositions and electrodes containing same. 4,476,007, Cl. 204-417.000.

Toomingas, Illar, to Telefonaktiebolaget L M Ericsson. Expansion screw with an expansion sleeve having an outer cylindrical surface and regions of greater and lesser wall thickness. 4,475,856, Cl. 411-33.000.

Toray Industries, Inc.: *See*—
Kato, Hiroyasu; and Yagi, Kenkichi, 4,476,186, Cl. 428-290.000.

Tordenmalm, L. Osten, to Akermans Verkstad AB. Devices for limiting the power output of a hydraulic assembly. 4,475,333, Cl. 60-395.000.

Torii, Shigeru: *See*—
Akada, Mitsuo; Masatomi, Tsunehiko; Shimizu, Yasuo; Torii, Shigeru; and Tanaka, Hideo, 4,475,992, Cl. 204-59.00R.

Toro Company, The: *See*—
Beihoffer, Randall A., 4,475,287, Cl. 30-276.000.

Toshiba Silicone Co., Ltd.: *See*—
Shimizu, Chiyuki, 4,476,278, Cl. 524-588.000.

Toyama, Koichi; and Makino, Tomoatsu, to Nippondenso Co., Ltd. Contactless erroneous ignition prevention type ignition system for internal combustion engine. 4,475,520, Cl. 123-618.000.

Toyo Kogyo Co., Ltd.: *See*—
Hamatani, Teruo; and Okino, Kiyomi, 4,475,763, Cl. 296-65.00R.

Toyo Seikan Kaisha Ltd.: *See*—
Komoda, Hirohisa; and Ishihara, Masatomo, 4,476,080, Cl. 264-176.00R.

Toyoda Koki Kabushiki Kaisha: *See*—
Nakamura, Keiichi; Mori, Yutaka; and Inaguma, Yoshiharu, 4,476,529, Cl. 364-424.000.

Toyoda, Motoya; Ainoya, Masayuki; Kozawa, Hiroomi; and Katagiri, Shigenobu, to Hitachi Koki Co., Ltd. Cleaning apparatus for xerographic printing apparatus. 4,475,807, Cl. 355-15.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Katou, Takashi; Hayakawa, Masaharu; and Hirosawa, Hidenori, 4,476,067, Cl. 261-39.00A.
Kawai, Hisasi; Tokura, Norihito; Kohama, Tokio; Kanehara, Kenji; Ito, Takayoshi; and Hasegawa, Kazutaka, 4,475,388, Cl. 73-204.000.
Kobayashi, Nobuyuki; Itoh, Hiroshi; and Sugiura, Yoichi, 4,475,517, Cl. 123-489.000.
Oonaka, Hidemi, 4,475,522, Cl. 123-520.000.
Takamatsu, Masahiro; and Yamada, Masaaki, 4,475,614, Cl. 180-90.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,476,532, Cl. 364-431.050.
Mizuno, Kazuyoshi, 4,475,504, Cl. 123-339.000.
Nakatomi, Takayoshi; and Aoki, Keiji, 4,475,381, Cl. 73-115.000.
Oono, Katsuyasu; and Kaji, Gozo, 4,475,490, Cl. 123-90.520.

Tranquilli, Angelo: *See*—
Tomassini, Maurizio; Penco, Eugenio; and Tranquilli, Angelo, 4,475,788, Cl. 350-96.200.

Transaction Security, Inc.: *See*—
Hastings, Otis H., 4,475,465, Cl. 109-2.000.

Transnuklear GmbH: *See*—
Muller, Erhard; Christ, Richard; and Kroll, Hartmut, 4,476,394, Cl. 250-507.100.

Trapp, Turner J.: *See*—
Cawley, William E.; and Trapp, Turner J., 4,475,948, Cl. 75-230.000.

Traver, Frank J.: *See*—
Dallavia, Anthony J., Jr.; Van Vleck, Gordon T.; and Traver, Frank J., 4,476,241, Cl. 502-156.000.

Trenkle, Robert W.: *See*—
Hill, Ira D.; Trenkle, Robert W.; Mookherjee, Braja D.; and Wolff, Robin K., 4,476,041, Cl. 252-522.00R.

Triple R Hydraulics, Inc.: *See*—
Cudnohufsky, Sylvester R., 4,475,421, Cl. 82-25.000.

Triumph-Adler A.G. fur Buro-und Informationstechnik: *See*—
Muller, Siegfried; and Schulte, Harmut, 4,475,785, Cl. 339-75.00P.

Trogan, John F., to C.G. Bretting Mfg. Co., Inc. Apparatus for folding and stacking paper products. 4,475,730, Cl. 270-41.000.

Tromp, Chantal L.: *See*—
Kane, Odile B.; George, Eric; Tromp, Chantal L.; and Goll, Serge, 4,476,221, Cl. 435-2.000.

Tronzano, Sergio; and Vignal, Carlo, to Ing. C. Olivetti & C., S.p.A. Apparatus for recording flexible magnetic disks. 4,476,508, Cl. 360-106.000.

Trostel, Louis J., Jr.: *See*—
Jones, Cecil M.; Washburn, Malcolm E.; and Trostel, Louis J., Jr., 4,476,234, Cl. 501-89.000.

Troup, Robert M.: *See*—
Quinones, Matthew M.; Mirow, Fred A.; and Troup, Robert M., 4,476,543, Cl. 364-900.000.

Truninger, Thomas, to Adna Aktiengesellschaft. Compact vacuum conveyor apparatus. 4,475,848, Cl. 406-115.000.

TRW Inc.: *See*—
Rabe, William T.; and Rau, Jim L., 4,475,440, Cl. 91-375.00A.

Tsang, Won-Tien: *See*—
Capasso, Federico; Tsang, Won-Tien; and Williams, Gareth F., 4,476,477, Cl. 357-30.000.

Tsao, Utah, to Lummus Company, The. Fluidized bed system. 4,476,160, Cl. 422-144.000.

Tseng, Ching-Ho. Internal combustion engine having an exhaust gas turbine and fuel preheating using exhaust gas heat and method of operation thereof. 4,475,340, Cl. 60-598.000.

Tsou, John L., to McQuay Inc. Heat exchanger with tubes fixed at baffles. 4,475,588, Cl. 165-159.000.

Tsubakimoto Chain Company: *See*—
Onaya, Mamoru; Chiba, Hitoshi; and Hosokawa, Toshihiro, 4,475,842, Cl. 403-370.000.

Tsuge, Kazunori: *See*—
Tawada, Yoshihisa; and Tsuge, Kazunori, 4,476,346, Cl. 136-249.000.

Tsukahara, Michiyoshi, to Alps Electric Co., Ltd. Thick film electronic circuit. 4,476,518, Cl. 361-328.000.

Tsumaki, Masahiro; Fujii, Toshihiko; Kamiya, Hideaki; Suzuki, Haruo; and Goto, Yoshihiro, to Nissan Motor Company, Limited. Tiltable hanger apparatus. 4,475,462, Cl. 105-149.000.

Tsumura, Kenji; and Yamashita, Masayuki, to Oriental Metal MFG. Co., LTD. Process for distilling water and distillation apparatus. 4,475,988, Cl. 202-174.000.

Tsunoda, Kazuhiko; Tsurumi, Yasuyuki; and Komori, Masamichi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust system for motor vehicles. 4,475,622, Cl. 181-227.000.

Tsurumi, Yasuyuki: *See*—
Tsunoda, Kazuhiko; Tsurumi, Yasuyuki; and Komori, Masamichi, 4,475,622, Cl. 181-227.000.

Tsuruta, Hisato: *See*—
Kashiwaya, Mineo; Tanabe, Yoshiyuki; Yamada, Kinsaku; and Tsuruta, Hisato, 4,475,518, Cl. 123-494.000.

Tugaye, Jean. Apparatus for centering and stabilizing the size of a target image. 4,476,494, Cl. 358-222.000.

Turaew, Larissa W.: *See*—
McCandlish, Larry E.; and Turaew, Larissa W., 4,476,102, Cl. 423-365.000.

Turner, Robert L.; and Prusak, John J., to RCA Corporation. Method and apparatus for manufacturing video disc caddy. 4,475,966, Cl. 156-73.100.

Tyler, Gary A., to Kaiser Aluminum & Chemical Corporation. Lifter for rotary kiln. 4,475,886, Cl. 432-118.000.

Tyree, Phillip O.: *See*—
Atwood, George E.; Cochran, Douglas E.; Sadan, Abraham; Burnett, Charles; Tyree, Phillip O.; and Fletcher, Archibald W., 4,475,771, Cl. 299-4.000.

Tyryshkina, Galina B.: *See*—
Vasiliev, Boris P.; Borisov, Nikolai L.; Semenov, Mikhail K.; Ponomarev, Ivan K.; Tyryshkina, Galina B.; and Gorbatenko, Igor V., 4,475,587, Cl. 165-140.000.

Ube Industries, Ltd.: *See*—
Maehara, Nobunori; Utada, Noribumi; Oda, Taiji; Ashitaka, Hidetomo; and Ishikawa, Hideo, 4,476,287, Cl. 526-92.000.

Uchino, Yasuhito; and Miyajima, Hisashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Telephone device. 4,476,354, Cl. 179-189.00R.

Ueda, Ikuo: *See*—
Ishino, Teiichi; Ueda, Ikuo; and Kai, Rikiya, 4,476,257, Cl. 523-181.000.

Ueda, Takehiko: *See*—
Sakanoue, Kei; Hirano, Shigeo; Ueda, Takehiko; and Adachi, Keiichi, 4,476,219, Cl. 430-542.000.

Uedaira, Satoru: *See*—
Hayakawa, Masatoshi; Aso, Koichi; Uedaira, Satoru; Ochiai, Yoshitaka; Matsuda, Hideki; Hotai, Kazuhide; and Hayashi, Kazuhiko, 4,475,962, Cl. 148-108.000.

Ueguri, Shigeo: *See*—
Mizuno, Takaji; Segawa, Hirohisa; Ueguri, Shigeo; Tabata, Yooichiro; and Hiramoto, Seigo, 4,476,376, Cl. 219-130.210.

Ueno, Tsutomu: *See*—
Matsuda, Yukio; and Ueno, Tsutomu, 4,475,369, Cl. 72-38.000.

Ueyama, Akihide; Kumano, Nobuo; and Takase, Hidetomo, to Tokyo Shibaura Denki Kabushiki Kaisha. Emission type computed tomography apparatus. 4,476,389, Cl. 250-363.00S.

Uijen, Antonius J. M.: *See*—
van de Ven, Everhardus P. G. T.; and Uijen, Antonius J. M., 4,476,483, Cl. 357-71.000.

Ullman, John E., to Mead Corporation, The. Package and process of forming same. 4,475,653, Cl. 206-497.000.
Ullrich, Manfred: *See—*
Muller-Frank, Ulrich; Reutler, Herbert; and Ullrich, Manfred, 4,476,089, Cl. 376-381.000.
Umeda, Hiroyuki: *See—*
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Umemura, Shizuo: *See—*
Matsufuji, Akihiro; Umemura, Shizuo; Aonuma, Masashi; Miyatsuka, Hajime; and Kitamoto, Tatsuji, 4,475,946, Cl. 75-0.5AA.
Underwood, Herbert N., to Borg-Warner Corporation. Continuously variable transmission down shift control. 4,475,416, Cl. 74-868.000.
Union Carbide Corporation: *See—*
Fuderer, Andrija, 4,475,929, Cl. 55-25.000.
Gray, Robert L., Jr.; and Holcombe, Thomas C., 4,476,345, Cl. 585-820.000.
Howard, Ronald A.; Sarangapani, Srinivasan; and Edwards, Lawrence G., 4,476,002, Cl. 204-283.000.
Mellors, Geoffrey W., 4,476,104, Cl. 423-605.000.
Reichle, Walter T., 4,476,324, Cl. 568-388.000.
Salensky, George A., 4,476,260, Cl. 523-402.000.
Wesner, John A., 4,476,202, Cl. 429-94.000.
Union Oil Company of California: *See—*
Watkins, David R.; and Watanabe, David J., 4,475,595, Cl. 166-303.000.
Young, Donald C.; and Green, James A., II, 4,476,113, Cl. 424-161.000.
Union Special G.m.b.H: *See—*
von Hagen, Wolf R.; and Strauss, Johannes K., 4,475,474, Cl. 112-121.260.
Uniroyal, Inc.: *See—*
Andersen, Paul G., 4,476,283, Cl. 525-53.000.
United States of America
Air Force: *See—*
Christe, Karl O.; and Schack, Carl J., 4,476,337, Cl. 570-148.000.
Marvel, Carl S.; and Lin, See, 4,476,062, Cl. 260-544.00B.
Pohle, Richard H.; and Ohlmann, Robert C., 4,476,161, Cl. 427-162.000.
Army: *See—*
Gilbert, Everett E., 4,476,060, Cl. 260-466.000.
Rose, Douglas N., 4,476,150, Cl. 427-10.000.
Energy: *See—*
Ackerman, John P.; and Young, John E., 4,476,198, Cl. 429-32.000.
Batzer, Thomas H.; and Cali, Wayne R., 4,475,349, Cl. 62-55.500.
Blander, Milton; Wai, Chien M.; and Nagy, Zoltan, 4,475,993, Cl. 204-64.00T.
Brinker, C. Jeffrey; and Reed, Scott T., 4,476,156, Cl. 427-82.000.
Cawley, William E.; and Trapp, Turner J., 4,475,948, Cl. 75-230.000.
Chen, Michael J.; and Rathke, Jerome W., 4,476,334, Cl. 568-902.000.
Chum, Helena L.; and Sopher, David W., 4,476,025, Cl. 210-638.000.
Collins, H. Dale; Prince, James M.; and Davis, Thomas J., 4,476,434, Cl. 324-233.000.
Coyle, R. T.; and Barrett, Joy M., 4,475,682, Cl. 228-123.000.
Frank, Arthur J.; and Honda, Kenji, 4,476,003, Cl. 204-290.00R.
Greenbaum, Elias, 4,476,105, Cl. 423-648.00R.
Herceg, Joseph E., 4,476,197, Cl. 429-32.000.
Jardin, Stephen C.; and Christensen, Uffe R., 4,476,085, Cl. 376-137.000.
Knize, Randall J.; and Cecchi, Joseph L., 4,476,100, Cl. 423-249.000.
Mead, Judith W.; Montoya, Orelio J.; Rand, Peter B.; and Willan, Vernon O., 4,476,159, Cl. 427-136.000.
Poeppel, Roger B.; and Dusek, Joseph T., 4,476,196, Cl. 429-32.000.
Sapienza, Richard S.; Slegeir, William A.; and Foran, Michael T., 4,476,103, Cl. 423-417.000.
Shang, Jer-Yu; Mei, Joseph S.; and Wilson, John S., 4,475,884, Cl. 431-170.000.
Struven, Warren C., 4,476,574, Cl. 455-55.000.
Health and Human Services: *See—*
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Punia, David T.; Pope, Malcolm; and Donnermeyer, Dennis, 4,475,401, Cl. 73-658.000.
National Aeronautics and Space Administration: *See—*
Barmatz, Martin B., 4,475,921, Cl. 23-313.00R.
Farmer, Moses G., 4,475,385, Cl. 73-147.000.
Kuo, Yu Shen, 4,475,527, Cl. 125-13.00R.
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Best, Wronald S., 4,476,402, Cl. 307-270.000.
Buczek, Carl J.; and Belek, Ronald E., 4,475,812, Cl. 356-32.000.
Chang, Marguerite S.; and Orndoff, Robert R., 4,476,322, Cl. 564-109.000.
Crabtree, David J.; and Park, Elizabeth Y., 4,476,285, Cl. 525-113.000.
Dragonette, Louis R.; Frank, Laurence J.; and Numrich, Susan K., 4,476,549, Cl. 367-13.000.
Durrell, Robert R., 4,475,461, Cl. 102-200.000.
Mooradian, Gregory C.; and Stotts, Larry B., 4,475,816, Cl. 356-437.000.
Sica, Louis, Jr., 4,475,792, Cl. 350-162.170.
U.S. Philips Corporation: *See—*
Cantou, Christian, 4,476,438, Cl. 330-149.000.
Durr, Heinrich; Haubrich, Lothar; Weber, Wendelin; and Richter, Hermann, 4,475,826, Cl. 400-124.000.
Gerritsen, Frederik H.; and Janssen, Daniel J. G., 4,476,352, Cl. 179-81.00R.
Haarbosch, Willem R., 4,475,649, Cl. 206-328.000.
Hobbs, Donald S., 4,476,464, Cl. 340-731.000.
Lersmacher, Bernhard; and van Kollenburg, Ludovicus W. J., 4,476,163, Cl. 427-249.000.
Marche, Pierre, 4,475,814, Cl. 356-138.000.
van de Ven, Everhardus P. G. T.; and Uijen, Antonius J. M., 4,476,483, Cl. 357-71.000.
Van Ruyven, Lodewijk J., 4,476,563, Cl. 372-50.000.
Wiegman, Nelie J., 4,476,544, Cl. 365-19.000.
Zalm, Pieter; Jacobs, Bernardus A. J.; and De Poorter, Adriaan W., 4,476,214, Cl. 430-270.000.
U.S. Seating Co., Inc.: *See—*
DeLong, Arthur; and Balani, Prem M., 4,475,762, Cl. 296-65.00R.
United Stirling AB: *See—*
Percival, Worth H.; and Wells, David N., 4,475,538, Cl. 126-439.000.
United Technologies Corporation: *See—*
Giamei, Anthony F.; Salkeld, Richard W.; and Anderson, Neal P., 4,475,582, Cl. 164-122.200.
Kalmanash, Michael H., 4,476,485, Cl. 358-73.000.
Patacca, Angelo M.; and Premont, Emile J., 4,475,864, Cl. 415-9.000.
Rhemer, Chris C.; Hughes, Scott E.; and Gostic, William J., 4,475,980, Cl. 156-603.000.
Sanborn, Harold C.; and Griffith, James B., 4,476,194, Cl. 428-585.000.
Veltri, Richard D.; and Galasso, Francis S., 4,476,164, Cl. 427-249.000.
Veltri, Richard D.; and Galasso, Francis S., 4,476,178, Cl. 428-215.000.
Universal Pioneer Corporation: *See—*
Kanamaru, Hitoshi; Amaya, Toshiyuki; Ishiguro, Kazutoyo; and Masaki, Keiji, 4,476,499, Cl. 358-342.000.
University of California, The Regents of the: *See—*
Ajagu, Christopher O.; Libby, Paul A.; and LaRue, John C., 4,475,392, Cl. 73-432.00R.
University of Georgia Research Foundation, Inc.: *See—*
Cormier, Milton J., 4,476,141, Cl. 424-321.000.
UOP Inc.: *See—*
Carson, Don B., 4,476,094, Cl. 422-62.000.
Gatsis, John G., 4,476,012, Cl. 208-251.00R.
Kulprathipanja, Santi; Neuzil, Richard W.; and Landis, Arthur M., 4,475,954, Cl. 127-46.300.
O'Hara, Mark J.; and Imai, Tamotsu, 4,476,342, Cl. 585-514.000.
Up-Right, Inc.: *See—*
Fisher, Robert E., 4,475,611, Cl. 180-6.500.
Upjohn Company, The: *See—*
Coleman, James H., 4,476,134, Cl. 424-269.000.
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USM Corporation: *See—*
Morse, Albert I.; and Simmonds, Robert C., Jr., 4,475,477, Cl. 118-406.000.
USV Pharmaceutical Corporation: *See—*
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Wright, Richard F.: *See*—
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Wright, Wade S.; Voisine, John T.; and Huppi, Glenn S. Non-contact sensor for determining moving flat steel strip shape profile. 4,476,430, Cl. 324-61.00R.
Wunderlich, Alan M. Utilizing gamma cameras for uptake studies. 4,476,385, Cl. 250-303.000.
Wyder, Manfred, to American Safety Equipment Corporation. Inertia reel using modular locking mechanism. 4,475,697, Cl. 242-107.40A.
Wyler, Gary J., to McGraw-Edison Company. Apparatus for clamping cables. 4,475,843, Cl. 403-394.000.
Wyndrum, Ralph W., Jr.: *See*—
Brolin, Stephen J.; and Wyndrum, Ralph W., Jr., 4,476,559, Cl. 370-110.100.
Wyoming Mineral Corporation: *See*—
Camp, Floyd E.; and Swartzlander, Amy B., 4,476,099, Cl. 423-10.000.
Jan, Raymond J., 4,475,772, Cl. 299-5.000.
Xerox Corporation: *See*—
Bains, Sudarshan S., 4,475,896, Cl. 493-454.000.
Benson, Richard C., 4,475,733, Cl. 271-120.000.
Clausing, Don P.; Holmes, Maurice F.; Povio, Raymond A.; and Rebres, Robert P., 4,475,732, Cl. 271-10.000.
Crean, Peter A.; D'Ortenzio, Remo J.; and Grow, Carolyn P., 4,476,542, Cl. 364-900.000.
Croucher, Melvin D.; Duff, James M.; Hair, Michael L.; Lok, Kar P.; and Wong, Raymond W., 4,476,210, Cl. 430-114.000.
Daughton, John W.; Lakatos, Andras I.; Brady, Terence W.; Bryce, James R.; Evanitsky, Eugene S.; and Baker, George E., 4,475,806, Cl. 355-14.00R.
Starkweather, Gary K., 4,475,787, Cl. 350-6.400.
Xomox Corporation: *See*—
DeJager, Everett J., 4,475,712, Cl. 251-214.000.
Reed, C. Lawson; and George, J. Anthony, 4,475,713, Cl. 251-214.000.
Yabe, Kohichi: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
Yagi, Kenkichi: *See*—
Kato, Hiroyasu; and Yagi, Kenkichi, 4,476,186, Cl. 428-290.000.
Yakubovich, Solomon L.; Kotsen, Marat E.; Golubnichy, Vladislav V.; Gerling, Voldemar E.; and Stepanov, Jury N., to Vsesojuzny Nauchnoisledovatelsky Institut Miniralnogo Syria. Radiometric method for determining concentration of naturally occurring isotopes and device therefor. 4,476,388, Cl. 250-361.00R.
Yakushiji, Shigenori: *See*—
Iesaka, Susumu; and Yakushiji, Shigenori, 4,476,481, Cl. 357-58.000.
Yakushizi, Shigenori: *See*—
Iesaka, Susumu; and Yakushizi, Shigenori, 4,476,154, Cl. 427-53.100.
Yale University: *See*—
Sears, Marvin; and Caprioli, Joseph, 4,476,140, Cl. 424-283.000.
Yamada, Kinsaku: *See*—
Kashiwaya, Mineo; Tanabe, Yoshiyuki; Yamada, Kinsaku; and Tsuruta, Hisato, 4,475,518, Cl. 123-494.000.
Yamada, Masaaki: *See*—
Takamatsu, Masahiro; and Yamada, Masaaki, 4,475,614, Cl. 180-90.000.
Yamada, Yoshitsugu: *See*—
Sakano, Isao; Miyahara, Shiyoichiro; Yamada, Yoshitsugu; Okazaki, Yutaka; Tokuda, Hiroshi; Awaya, Akira; and Nakano, Takuo, 4,476,128, Cl. 424-250.000.
Yamagishi, Hiroshi: *See*—
Koizumi, Akio; and Yamagishi, Hiroshi, 4,476,436, Cl. 330-10.000.
Yamaguchi, Keiki; Sano, Shinichi; Akimoto, Hiromichi; Higashiizumi, Takao; Yamanaka, Mineo; and Ishihara, Takahiko, to Yokogawa Hokushin Electric Corporation. Ultrasonic needle housing probe with continuous locator array. 4,475,553, Cl. 128-660.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Hayashida, Takanori, 4,475,509, Cl. 123-432.000.
Matsumoto, Kuniyoshi, 4,475,502, Cl. 123-331.000.
Minami, Shunji; and Kimura, Hiroshi, 4,475,617, Cl. 180-219.000.
Yamakawa, Kazumi: *See*—
Kawakami, Hirotarou; Yamakawa, Kazumi; Yasuda, Hiroshi; and Kitaoka, Teruhiko, 4,475,305, Cl. 446-463.000.
Yamakawa, Mitihiro: *See*—
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Shibata, Masahiro; Saito, Toshitaka; and Yamakawa, Mitihiro, 4,476,008, Cl. 204-425.000.
Yamama Hatsudoki Kabushiki Kaisha: *See*—
Odashima, Rou, 4,475,488, Cl. 123-73.0AD.
Yamamoto, Hiroshi: *See*—
Jo, Toshitaka; Hara, Kuniyoshi; Mizuta, Koichi; and Yamamoto, Hiroshi, 4,476,400, Cl. 307-147.000.
Yamamoto, Kazumasa, to Kokusan Kinzoku Kogyo Kabushiki Kaisha. Outside door handle. 4,475,415, Cl. 74-543.000.
Yamamoto, Kuniyuki: *See*—
Anno, Nobuo; Okui, Haruki; Yamamoto, Kuniyuki; and Miyazaki, Kunio, 4,475,893, Cl. 474-13.000.
Yamanaka, Mineo: *See*—
Yamaguchi, Keiki; Sano, Shinichi; Akimoto, Hiromichi; Higashiizumi, Takao; Yamanaka, Mineo; and Ishihara, Takahiko, 4,475,553, Cl. 128-660.000.
Yamashita, Haruhisa: *See*—
Sakai, Toshio; Matsui, Takehiro; Tanioka, Akira; Koyanagi, Kohki; Ohkubo, Takaaki; Hori, Tohru; Matsui, Yoshihiko; Kawagishi, Itsuo; Fujii, Masahiro; Yabe, Kohichi; and Yamashita, Haruhisa, 4,475,609, Cl. 177-211.000.
Yamashita, Masayuki: *See*—
Tsumura, Kenji; and Yamashita, Masayuki, 4,475,988, Cl. 202-174.000.
Yamauchi, Takashi: *See*—
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,476,328, Cl. 568-775.000.
Yamawaki, Satoshi; Sugihara, Atsushi; Kobayashi, Yasushi; Ishida, Hiroshi; Kuramasu, Yukio; and Gotoh, Ichisei, to Alcan International Limited. Flux for brazing aluminum and method of employing the same. 4,475,960, Cl. 148-26.000.
Yamazaki, Sho; Matsumoto, Kazutoshi; and Ochiai, Hideo, to Honda Giken Kogyo Kabushiki Kaisha. Engine cover device for light vehicles. 4,475,616, Cl. 180-215.000.
Yanagisawa, Takanori: *See*—
Nishida, Minoru; Hattori, Tadashi; and Yanagisawa, Takanori, 4,476,412, Cl. 313-130.000.
Yasuda, Hiroshi: *See*—
Kawakami, Hirotarou; Yamakawa, Kazumi; Yasuda, Hiroshi; and Kitaoka, Teruhiko, 4,475,305, Cl. 446-463.000.
Yasuda, Yasushi: *See*—
Maeda, Kuniyasu; Kaeriyama, Minoru; Matsui, Nobuo; Mizuno, Masami; Yasuda, Yasushi; and Nakata, Akira, 4,476,303, Cl. 544-223.000.
Yazaki, Susumu: *See*—
Takasu, Ryo; and Yazaki, Susumu, 4,475,815, Cl. 356-385.000.
Yazawa, Chihiro: *See*—
Harada, Takao; and Yazawa, Chihiro, 4,476,318, Cl. 560-50.000.
Yokogawa Hokushin Electric Corporation: *See*—
Yamaguchi, Keiki; Sano, Shinichi; Akimoto, Hiromichi; Higashiizumi, Takao; Yamanaka, Mineo; and Ishihara, Takahiko, 4,475,553, Cl. 128-660.000.
Yokota, Kenji; Kusano, Hiroshi; and Sugimoto, Ryuichi, to Mitsubishi Chemical Industries Limited; and Wakamoto Pharmaceutical Co., Ltd. Process for the purification of riboflavine-5'-monophosphate. 4,476,304, Cl. 544-244.000.
Yonishi, Satoshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; Takeno, Hidekazu; Okada, Satoshi; and Hashimoto, Masashi, 4,476,050, Cl. 260-112.50R.
York, Earl D.; and Porter, Darrell D., to Standard Oil Company (Indiana); and Gulf Oil Corp. Shale oil explosives. 4,475,965, Cl. 149-21.000.
York-Shipley, Inc.: *See*—
Korenberg, Jakob, 4,475,467, Cl. 110-245.000.
Yoshida, Masahiro; and Oka, Masahiko, to Fuji Electric Co., Ltd. Stabilized power source parallel operation system. 4,476,399, Cl. 307-44.000.
Yoshida, Tetsuo: *See*—
Masaki, Nobuo; and Yoshida, Tetsuo, 4,476,361, Cl. 200-305.000.
Yoshihara, Hiroshi. Core belt arrangement of a woman's garment. 4,475,552, Cl. 128-531.000.
Yoshimura, Hirofumi: *See*—
Kusunoki, Shigeru; and Yoshimura, Hirofumi, 4,476,362, Cl. 219-10.55F.
Yoshino Kogyosho Co., Ltd.: *See*—
Takada, Takuzo; and Iizuka, Takao, 4,476,084, Cl. 264-342.00R.

Young, Donald C.; and Green, James A., II, to Union Oil Company of California. Stabilized fumigant composition comprising an aqueous solution of ammonia, hydrogen sulfide, carbon disulfide and sulfur. 4,476,113, Cl. 424-161.000.

Young, Harland H., to Michigan Standard Alloys. Method of converting waste dross to fertilizer. 4,475,940, Cl. 71-34.000.

Young, John E.: *See*—
Ackerman, John P.; and Young, John E., 4,476,198, Cl. 429-32.000.

Young, Lauren D.; and Cameron, Robert S. Tire repair apparatus. 4,475,879, Cl. 425-22.000.

Young, Neils O.; Henderson, Robert; and Kerney, Peter J., to Helix Technology Corporation. Refrigeration system with linear motor trimming of displacer movement. 4,475,346, Cl. 62-6.000.

Young, Robert A. Photoelectron source for use in a gas chromatograph detector and mass spectrometer ion source. 4,476,392, Cl. 250-423.00R.

Young, William P., to William P. Young Co. Machine for applying base cups to bottles. 4,475,645, Cl. 198-420.000.

Yu, James C.; and Patel, Suman H., to National Semiconductor Corporation. CMOS Input and output protection circuit. 4,476,476, Cl. 357-23.130.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See*—
Tausend, Erich, 4,475,639, Cl. 192-53.00G.

Zalm, Pieter; Jacobs, Bernardus A. J.; and De Poorter, Adriaan W., to U.S. Philips Corporation. Optical information disk comprising tellurium, selenium and antimony. 4,476,214, Cl. 430-270.000.

Zander, Joachim: *See*—
Dietzsch, Kurt; Oess, Hans-Dieter; Kaiele, Wolfgang; Zander, Joachim; and Jeske, Gustav, 4,475,445, Cl. 98-2.050.

Zang, Hyung K.: *See*—
Kuhlmann, Erven J.; Guptill, Richard P.; Jung, Dick Y.; and Zang, Hyung K., 4,476,009, Cl. 208-8.0LE.

Zavadil, Milan, to Vyzkumny ustav stavebnich hmot. Method for measuring the specific surface of pulverized materials and apparatus for performing the same. 4,475,391, Cl. 73-432.0PS.

Zazula, Teodosij J.: *See*—
Willis, Brian J.; and Zazula, Teodosij J., 4,476,040, Cl. 252-522.00R.

Zeilinger, Hans: *See*—
Muhlratzer, August; Stemmler, Bruno; and Zeilinger, Hans, 4,475,958, Cl. 148-6.350.

Zekich, Michael B.: *See*—
Heise, Stanley R.; Blackston, Michael D.; Zekich, Michael B.; and Parselle, John L. B., 4,475,308, Cl. 49-42.000.

Zell, Dale R.: *See*—
Asick, John C.; Douty, George H.; Goodman, Joseph R.; Jones, Kermit M., Jr.; Landis, John M.; Snyder, Clair W., Jr.; Woratyla, John A.; and Zell, Dale R., 4,475,781, Cl. 339-17.0LM.

Zenith Electronics Corporation: *See*—
Merrell, Richard G., 4,476,488, Cl. 358-86.000.
Park, Yong S., 4,475,797, Cl. 354-1.000.

Ziegler, Gerhard; and Thilow, Alfred, to Robert Bosch GmbH. Method for electrochemical removal of metallic work material. 4,475,995, Cl. 204-129.200.

Zielinski, Leo J.: *See*—
Kock, Erhard; and Zielinski, Leo J., 4,475,447, Cl. 98-115.0SB.

Zilges, Franz J.: *See*—
Ostlinning, Gunter; Roever, Otto A.; Wintzen, Gunther; and Zilges. Franz J., 4,475,372, Cl. 72-255.000.

Zimmerman, Sheldon B.: *See*—
Kempf, August J.; Wilson, Kenneth E.; Hensens, Otto D.; Monaghan, Richard L.; Zimmerman, Sheldon B.; and Dulaney, Eugene L., 4,476,139, Cl. 424-283.000.

Zimmermann, Horst, to Siemens Aktiengesellschaft. Control arrangement for a static converter. 4,476,417, Cl. 318-329.000.

Zimmern, Bernard. Globoid worm machine with metal ring in bearing housing. 4,475,877, Cl. 418-140.000.

Ziolkowski, Antoni M.; and Stoffa, Paul L., to British National Oil Corporation, The. Determination of far field signatures, for instance of seismic sources. 4,476,550, Cl. 367-21.000.

Ziolkowski, Antoni M.; Hatton, Leslie; Parkes, Gregory E.; and Haugland, Tor-Arvid, to British National Oil Corporation, The. Method of determining the signatures of arrays of marine seismic sources. 4,476,553, Cl. 367-144.000.

Zuiderwyk, Martin A. M.: *See*—
Reid, Alan F.; and Zuiderwyk, Martin A. M., 4,476,386, Cl. 250-310.000.

Zulliger, Hans-Rudolf, to Mettler Instrumente AG. Transducer for dynamometer. 4,475,409, Cl. 73-862.650.

Zylbert, Thaddeus J., to Singer Company, The. Gear attaching arrangement for looptaker drive shaft. 4,475,475, Cl. 112-228.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF OCTOBER, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Basily, Basily B.: *See*—
Sansome, Dennis H.; Jones, Gerald M.; and Basily, Basily B., Re. 31,698, Cl. 73-862.650.

Brown, Omar L., to Fraze, Ermal C. Tab for easy-open ecology end. Re. 31,702, Cl. 220-269.000.

Eckel, Emery L., to Eckel Manufacturing Company, Inc. Back-up power tongs and method. Re. 31,699, Cl. 73-862.250.

Eckel Manufacturing Company, Inc.: *See*—
Eckel, Emery L., Re. 31,699, Cl. 73-862.250.

Fraze, Ermal C.: *See*—
Brown, Omar L., Re. 31,702, Cl. 220-269.000.

Gomberg, Henry J.; Lewis, John G.; and Powers, John E., to KMS Fusion, Inc. Radiolytic dissociative gas power conversion cycles. Re. 31,697, Cl. 60-644.100.

Hester, Thomas E., to Litton Systems, Inc. Transformer having novel multiple winding and support structure and method of making same. Re. 31,704, Cl. 361-399.000.

Jones, Gerald M.: *See*—
Sansome, Dennis H.; Jones, Gerald M.; and Basily, Basily B., Re. 31,698, Cl. 73-862.650.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, Re. 31,701, Cl. 156-384.000.

KMS Fusion, Inc.: *See*—
Gomberg, Henry J.; Lewis, John G.; and Powers, John E., Re. 31,697, Cl. 60-644.100.

Lewis, John G.: *See*—
Gomberg, Henry J.; Lewis, John G.; and Powers, John E., Re. 31,697, Cl. 60-644.100.

Litton Systems, Inc.: *See*—
Hester, Thomas E., Re. 31,704, Cl. 361-399.000.

National Research Development Corporation: *See*—
Sansome, Dennis H.; Jones, Gerald M.; and Basily, Basily B., Re. 31,698, Cl. 73-862.650.

Partin, Robert M.: *See*—
Prather, Richard A.; Williams, David L.; Partin, Robert M.; and Rabourn, Warren J., deceased, Re. 31,703, Cl. 264-109.000.

Powers, John E.: *See*—
Gomberg, Henry J.; Lewis, John G.; and Powers, John E., Re. 31,697, Cl. 60-644.100.

Prather, Richard A.; Williams, David L.; Partin, Robert M.; and Rabourn, Warren J., deceased (by Rabourn, Hazel L., legal representative), to Upjohn Company, The. Process of making particle board from pyrophosphate treated polyisocyanates. Re. 31,703, Cl. 264-109.000.

Rabourn, Hazel L., legal representative: *See*—
Prather, Richard A.; Williams, David L.; Partin, Robert M.; and Rabourn, Warren J., deceased, Re. 31,703, Cl. 264-109.000.

Rabourn, Warren J., deceased: *See*—
Prather, Richard A.; Williams, David L.; Partin, Robert M.; and Rabourn, Warren J., deceased, Re. 31,703, Cl. 264-109.000.

Sansome, Dennis H.; Jones, Gerald M.; and Basily, Basily B., to National Research Development Corporation. Load-measuring devices. Re. 31,698, Cl. 73-862.650.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Portable label printing and applying machine. Re. 31,701, Cl. 156-384.000.

Upjohn Company, The: *See*—
Prather, Richard A.; Williams, David L.; Partin, Robert M.; and Rabourn, Warren J., deceased, Re. 31,703, Cl. 264-109.000.

Williams, David L.: *See*—
Prather, Richard A.; Williams, David L.; Partin, Robert M.; and Rabourn, Warren J., deceased, Re. 31,703, Cl. 264-109.000.

Yamaguchi, Takeyoshi. Cigarette filter. Re. 31,700, Cl. 131-341.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Fairfax Dental Ltd.: *See*—
Smith, Andrew J., B1 4,189,834, Cl. 433-225.000.

Goodyear Tire & Rubber Company, The: *See*—
Lal, Joginder; and Senyek, Michael L., B1 4,301,258, Cl. 525-334.000.

Jacobsson, Sten A. L.: *See*—
Rothman, Ulf S. E.; and Jacobsson, Sten A. L., B1 4,225,580, Cl. 424-78.000.

Lal, Joginder; and Senyek, Michael L., to Goodyear Tire & Rubber Company, The. Cyclic organo carbonate and sulfite coupling agents for living polymers of conjugated dienes. B1 4,301,258, 10-9-84, Cl. 525-334.000.

Pharmacia Aktiebolag: *See*—
Rothman, Ulf S. E.; and Jacobsson, Sten A. L., B1 4,225,580, Cl. 424-78.000.

Rothman, Ulf S. E.; and Jacobsson, Sten A. L., to Pharmacia Aktiebolag. Method for cleansing fluid discharging skin surfaces, wounds and mucous membranes and means for carrying out the method. B1 4,225,580, 10-9-84, Cl. 424-78.000.

Schwab, Alfred: *See*—
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, B1 4,256,761, Cl. 424-282.000.

Senyek, Michael L.: *See*—
Lal, Joginder; and Senyek, Michael L., B1 4,301,258, Cl. 525-334.000.

Skiles, Jerry W.: *See*—
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, B1 4,256,761, Cl. 424-282.000.

Smith, Andrew J., to Fairfax Dental Ltd. Dental reinforcing pins. B1 4,189,834, 10-9-84, Cl. 433-225.000.

Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, to USV Pharmaceutical Corporation. Antihypertensive amides. B1 4,256,761, 10-9-84, Cl. 424-282.000.

USV Pharmaceutical Corporation: *See*—
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, B1 4,256,761, Cl. 424-282.000.

Williams, Bruce E.: *See*—
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, B1 4,256,761, Cl. 424-282.000.

LIST OF DESIGN PATENTEES

AB Perma System: *See*—
Brolin, Hans R., 275,828, Cl. D6-580.000.
Adams, Randy L. Collapsible hand-grip lever for motorcycle and the like. 275,847, 10-9-84, Cl. D12-179.000.
Ake, John C. Mounting device. 275,868, 10-9-84, Cl. D20-43.000.
Aksjeselskapet Jotul: *See*—
Heger, Niels; E., 275,877, Cl. D23-97.000.
Aktiebolaget Bofors: *See*—
Nilsson, Ove, 275,859, Cl. D15-28.000.
American Cyanamid Company: *See*—
Montgomery, John R.; Brumaghim, Milton W.; Deniega, Jose C.; and Butter, Reinhart, 275,885, Cl. D24-26.000.
Woodruff, Keith, 275,875, Cl. D22-19.000.
Anderson, Mark L.; and Child, Francis W. Test valve. 275,887, 10-9-84, Cl. D24-53.000.
Bambeck, Robert J. Control panel for a flue gas analyzer system. 275,851, 10-9-84, Cl. D13-35.000.
Barber, Denzil L. Bearing retainer. 275,861, 10-9-84, Cl. D15-138.000.
Baruffa, Olindo; and Jimenez, Antonio, to Mefina S.A. Ironing press. 275,901, 10-9-84, Cl. D32-9.000.
Berlex Laboratories, Inc.: *See*—
Malpass, Jack W., 275,833, Cl. D9-341.000.
Beychok, Alan M.; and Conklin, Marilyn, to Plough, Inc. Vitamin tablet or similar article. 275,898, 10-9-84, Cl. D28-3.000.
Beychok, Alan M.; and Conklin, Marilyn, to Plough, Inc. Vitamin tablet or similar article. 275,899, 10-9-84, Cl. D28-3.000.
Borst, Rodney D., to Seron Manufacturing Company. Packaging container. 275,835, 10-9-84, Cl. D9-415.000.
Brainard-Kilman Drill Company: *See*—
Kilman, John N., III; and Myers, Phillip L., 275,862, Cl. D15-138.000.
Brisson, Bernard A. Speaker. 275,852, 10-9-84, Cl. D14-35.000.
Brolin, Hans R., to AB Perma System. Angle gear device for venetian blinds. 275,828, 10-9-84, Cl. D6-580.000.
Brown, Dwight C. Retainer accessory for a garment hanger. 275,826, 10-9-84, Cl. D6-328.000.
Brown, Ivan R.; and Campanelli, Daniel J., to Hardinge Brothers, Inc. Combined chucker and bar machine. 275,860, 10-9-84, Cl. D15-130.000.
Brown Jordan Company Limited Partnership: *See*—
Caldwell, John W., 275,896, Cl. D26-110.000.
Brumaghim, Milton W.: *See*—
Montgomery, John R.; Brumaghim, Milton W.; Deniega, Jose C.; and Butter, Reinhart, 275,885, Cl. D24-26.000.
Buchanan, Bob B.: *See*—
Buchanan, Frank L., Jr.; and Buchanan, Bob B., 275,846, Cl. D12-125.000.
Buchanan, Frank L., Jr.; and Buchanan, Bob B. Combined bicycle pedal and toe clip. 275,846, 10-9-84, Cl. D12-125.000.
Bushong, James R. C., to Hayden, Inc. Fan blade. 275,884, 10-9-84, Cl. D23-165.000.
Butter, Reinhart: *See*—
Montgomery, John R.; Brumaghim, Milton W.; Deniega, Jose C.; and Butter, Reinhart, 275,885, Cl. D24-26.000.
Caldwell, John W., to Brown Jordan Company Limited Partnership. Lamp base. 275,896, 10-9-84, Cl. D26-110.000.
Campanelli, Daniel J.: *See*—
Brown, Ivan R.; and Campanelli, Daniel J., 275,860, Cl. D15-130.000.
Campion, Frank C.: *See*—
Perry, Andrew W.; Henson, Richard W.; Sargeant, Bruce A.; and Campion, Frank C., 275,841, Cl. D10-46.000.
Child, Francis W.: *See*—
Anderson, Mark L.; and Child, Francis W., 275,887, Cl. D24-53.000.
Classic Hus AB: *See*—
Fogler, Bjorn, 275,890, Cl. D25-17.000.
Fogler, Bjorn, 275,891, Cl. D25-17.000.
Conklin, Marilyn: *See*—
Beychok, Alan M.; and Conklin, Marilyn, 275,898, Cl. D28-3.000.
Beychok, Alan M.; and Conklin, Marilyn, 275,899, Cl. D28-3.000.
Cook, William J.; and Correa, Alvaro, to Timex Corporation. Alarm clock dial. 275,844, 10-9-84, Cl. D10-125.000.
Correa, Alvaro: *See*—
Cook, William J.; and Correa, Alvaro, 275,844, Cl. D10-125.000.
Crushell, Denis. Holder for credit card dockets. 275,865, 10-9-84, Cl. D19-92.000.
Deacon, Gene E. Multipocket apron for carrying children. 275,812, 10-9-84, Cl. D2-229.000.
Deniega, Jose C.: *See*—
Montgomery, John R.; Brumaghim, Milton W.; Deniega, Jose C.; and Butter, Reinhart, 275,885, Cl. D24-26.000.
Dietzen, Richard C. Mechanics adjustable light. 275,895, 10-9-84, Cl. D26-61.000.
Dilenno, Steven J. Belt mountable holder. 275,815, 10-9-84, Cl. D2-400.000.
Duggar, James H. Building structure. 275 893, 10-9-84, Cl. D25-33.000.
EFKA Werke Fritz Kiehn GmbH: *See*—
Schutze, Gunter; and Haller, Kurt, 275,897, Cl. D27-51.000.
Eli Lilly and Company: *See*—
Rosen, Marc A., 275,838, Cl. D9-435.000.
EPCo., Inc.: *See*—
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Fogler, Bjorn, to Classic Hus AB. Detached house. 275,891, 10-9-84, Cl. D25-17.000.
Forbes, Hampton E., Jr., to Westvaco Corporation. Display carton. 275,836, 10-9-84, Cl. D9-418.000.
Gatland, Kenneth; Tedd, David C.; Marsh, Hugh R.; and Masters, Stephen J., to Thorn Emi Instruments Limited. Carrying case for electrical measuring instruments or the like. 275,822, 10-9-84, Cl. D3-73.000.
Gaumer, Michael B. Building for the selling of ice cream. 275,892, 10-9-84, Cl. D25-18.000.
Gilbert, Donald G.; and Hastings, Roy E. Temperature level alarm. 275,842, 10-9-84, Cl. D10-106.000.
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Kelly, Mary Ann. Christmas decoration. 275,845, 10-9-84, Cl. D11-129.000.
Keyser, William A., to Levolor Lorentzen, Inc. Venetian blind and shade color sampler packet. 275,817, 10-9-84, Cl. D3-30.100.
Kilman, John N., III; and Myers, Phillip L., to Brainard-Kilman Drill Company. Drill shaft head. 275,862, 10-9-84, Cl. D15-138.000.
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Legerius, Bengt E.; and Siebert, Hans W., to Telefonaktiebolaget L M Ericsson. Electrical conductor wire feeding tube for fire wall lead-in. 275,831, 10-9-84, Cl. D8-14.000.
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Windsor, Henry T. Foldable bootjack. 275,814, 10-9-84, Cl. D2-378.200.
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332 4,475,470
345 4,475,471
347 4,475,472

CLASS 112

80 4,475,473
121.26 4,475,474
228 4,475,475

CLASS 116

210 4,475,476

CLASS 118

406 4,475,477
413 4,475,478
707 4,475,479

CLASS 119

2 4,475,480
51 R 4,475,481

CLASS 122

379 4,475,482

CLASS 123

1 A 4,475,483
3 4,475,484
41.05 4,475,485
52 M 4,475,486
73 AD 4,475,488
73 V 4,475,487
90.16 4,475,489
90.52 4,475,490
146.5 A 4,475,491
179 B 4,475,493
179 BG 4,475,492
188 A 4,475,494
197 AB 4,475,495
198 DB 4,475,498
198 F 4,475,496
4,475,497
317 4,475,499
321 4,475,500
325 4,475,501
331 4,475,502
339 4,475,503
4,475,504
4,475,505
352 4,475,506
357 4,475,507
425 4,475,508
432 4,475,509
4,475,510
436 4,475,511
440 4,475,512
446 4,475,513
458 4,475,514
467 4,475,515
470 4,475,516
489 4,475,517
494 4,475,518
502 4,475,519
4,475,521
520 4,475,522
557 4,475,523
568 4,475,524
4,475,525
618 4,475,520
4,475,526

CLASS 125

13 R 4,475,527

CLASS 126

9 R 4,475,528
77 4,475,529
110 B 4,475,530
121 4,475,531
204 4,475,532
279 4,475,533
299 D 4,475,534
415 4,475,535
419 4,475,536
438 4,475,537
439 4,475,538

CLASS 127

46.3 4,475,954

CLASS 128

6 4,475,539
4,475,540
4,475,541
69 4,475,542
78 4,475,543
92 A 4,475,546
92 BC 4,475,545
92 EA 4,475,544
133 4,475,547
207.14 4,475,548
303 B 4,475,550
303 R 4,475,549
419 D 4,475,551
531 4,475,552
660 4,475,553
664 4,475,554
670 4,475,555
673 4,475,556
681 4,475,557
710 4,475,558
716 4,475,559
785 4,475,560

CLASS 130

27 R 4,475,561

CLASS 131

110 4,475,562
341 Re.31,700

CLASS 132

85 4,475,563

CLASS 133

8 R 4,475,564

CLASS 136

249 4,476,346

CLASS 137

39 4,475,565
68 R 4,475,566
110 4,475,567
116 4,475,568
194 4,475,569
218 4,475,570
430 4,475,571
625.23 4,475,572
625.41 4,475,573

CLASS 139

92 4,475,574
439 4,475,575

CLASS 141

98 4,475,576
349 4,475,577

CLASS 148

1.5 4,475,955
3 4,475,956
6.16 4,475,957
6.35 4,475,958
24 4,475,959
26 4,475,960
31.55 4,475,961
108 4,475,962
128 4,475,963
187 4,475,964

CLASS 149

21 4,475,965

CLASS 152

415 4,475,578

CLASS 156

73.1 4,475,966
89 4,475,967
141 4,475,968
152 4,475,969
159 4,475,970
163 4,475,971
167 4,475,972
184 4,475,973
187 4,475,974
234 4,475,975
286 4,475,976
345 4,475,977
384 Re.31,701
497 4,475,978
542 4,475,979
603 4,475,980
636 4,475,981
643 4,475,982
656 4,475,983

CLASS 160

178 R 4,475,579
308 4,475,580

CLASS 162

76 4,475,984
219 4,475,985

CLASS 164

100 4,475,581
122.2 4,475,582
423 4,475,583

CLASS 165

76 4,475,584
134 R 4,475,585
4,475,586
140 4,475,587
159 4,475,588
166 4,475,589

CLASS 166

246 4,475,590
254 4,475,591
272 4,475,592
281 4,475,593
294 4,475,594
303 4,475,595
4,475,596
305 R 4,475,597
321 4,475,598
323 4,475,599
344 4,475,600

CLASS 172

283 4,475,601
713 4,475,602

CLASS 175

65 4,475,603
85 4,475,604
107 4,475,605
410 4,475,606
422 4,475,607

CLASS 177

211 4,475,608
4,475,609
4,475,610

CLASS 178

3 4,476,347

CLASS 179

2 C 4,476,348
18 B 4,476,349
70 4,476,350
77 4,476,351
81 R 4,476,352
107 E 4,476,353
189 R 4,476,354

CLASS 180

6.5 4,475,611
14.2 4,475,612
22 4,475,613
90 4,475,614
160 4,475,615
215 4,475,616
219 4,475,617
237 4,475,618

CLASS 181

137 4,475,619
146 4,475,620
212 4,475,621
227 4,475,622
243 4,475,623
292 4,475,624

CLASS 182

113 4,475,625
150 4,475,626
187 4,475,627
198 4,475,628

CLASS 184

15.1 4,475,629

CLASS 187

9 R 4,475,630
29 R 4,475,631

CLASS 188

71.4 4,475,632
73.45 4,475,633
218 A 4,475,634
282 4,475,635
296 4,475,636

CLASS 192

0.052 4,475,637
4 A 4,475,638
53 G 4,475,639
70.17 4,475,640
87.15 4,475,641

CLASS 198

345 4,475,642
347 4,475,643
407 4,475,644
420 4,475,645
480 4,475,646
711 4,475,647
830 4,475,648

CLASS 200

5 A 4,476,355
6 A 4,476,356
51.09 4,476,357
52 R 4,476,358
156 4,476,359
302.1 4,476,360
305 4,476,361

CLASS 201

7 4,475,986

CLASS 202

99 4,475,987
174 4,475,988
251 4,475,989

CLASS 204

2.1 4,475,990
15 4,475,991
17 4,476,006
59 R 4,475,992
64 T 4,475,993
129 4,475,994
129.2 4,475,995
129.46 4,475,996
158 R 4,475,997
159.15 4,475,998
159.23 4,475,999
192 M 4,476,000
228 4,476,001
283 4,476,002
290 R 4,476,003
299 R 4,476,004
403 4,476,005
417 4,476,007
425 4,476,008

CLASS 206

328 4,475,649
371 4,475,650
389 4,475,651
409 4,475,652
497 4,475,653
538 4,475,654
624 4,475,655

CLASS 208

8 LE 4,476,009
15 4,476,010
111 4,476,011
251 R 4,476,012

CLASS 209

166 4,476,013
434 4,476,014

CLASS 210

21.5 4,476,022
93 4,476,015
94 4,476,017
198.2 4,476,016
232 4,476,018
4,476,019
289 4,476,020
307 4,476,021
446 4,476,023
500.2 4,476,024
638 4,476,025
656 4,476,026
895 4,476,027
774 4,476,028

CLASS 211

41 4,475,656
46 4,475,657
54.1 4,475,658
55 4,475,659
113 4,475,660

CLASS 215

366 4,475,661

CLASS 219

10.55 A 4,476,363
10.55 F 4,476,362
10.81 4,476,364
56.22 4,476,365
4,476,366
60.2 4,476,367
69 M 4,476,369
69 V 4,476,368
78.16 4,476,370
83 4,476,371
120 4,476,372
121 LB 4,476,374
121 LN 4,476,375
121 P 4,476,373
130.21 4,476,376
216 4,476,377
270 4,476,378
524 4,476,379

CLASS 220

3 4,475,662
87 4,475,663
269 Re.31,702

CLASS 222

5 4,475,664
14 4,475,665
4,475,666
39 4,475,667
52 4,475,668
55 4,475,669
83 4,475,670
196 4,475,671
561 4,475,672

CLASS 223

70 4,475,673

CLASS 224

153 4,475,674
191 4,475,675
247 4,475,676

CLASS 226

74 4,475,677
143 4,475,678

CLASS 227

19 4,475,679
130 4,475,680

CLASS 228

4.5 4,475,681
123 4,475,682

CLASS 229

7 R 4,475,683

CLASS 235

61 B 4,476,380
375 4,476,381
491 4,476,382

CLASS 236

12.14 4,475,684
46 R 4,475,685
68 C 4,475,686

CLASS 237

12.3 A 4,475,687

CLASS 239

2 S 4,475,688
318 4,475,689
585 4,475,690
587 4,475,691
662 4,475,692

CLASS 242

42 4,475,693
54 R 4,475,694
4,475,695
66 4,475,696
86 4,475,698
107.4 A 4,475,697
137.1 4,475,699
197 4,475,700

CLASS 244

118.6 4,475,701
214 4,475,702

CLASS 248

188.1 4,475,703
346 4,475,704
447.2 4,475,705
542 4,475,706
636 4,475,707

CLASS 250

214 P 4,476,383
252.1 4,476,384
303 4,476,385
310 4,476,386
324 4,476,387
361 R 4,476,388
363 S 4,476,389
385 4,476,390
390 4,476,391
423 R 4,476,392
492.2 4,476,393
507.1 4,476,394

CLASS 251

6 4,475,708
4,475,709
30 4,475,710
85 4,475,711
214 4,475,712
4,475,713

CLASS 253

8.5 C 4,476,029
8.55 C 4,476,033
8.55 R 4,476,032
8.8 4,476,030
4,476,031
49.5 4,476,034
62.54 4,476,035
171 4,476,036
354 4,476,037
358 4,476,038
518 4,476,039
522 R 4,476,040
4,476,041
4,476,042
4,476,043
544 4,476,044
545 4,476,045
550 4,476,046
626 4,476,047
632 4,476,048

CLASS 254

89 H 4,475,714
134.3 R 4,475,715
228 4,475,716
264 4,475,717
371 4,475,718

CLASS 260

112 R 4,476,049
112.5 R 4,476,050
4,476,051
157 4,476,052
192 4,476,053
239 A 4,476,054
400 4,476,055
404 4,476,056
412.2 4,476,057
458 F 4,476,058
465.7 4,476,059
466 4,476,060
501.17 4,476,061
544 B 4,476,062
940 4,476,063
976 4,476,064

CLASS 261

23 R 4,476,065
29 4,476,066
39 A 4,476,067
65 4,476,068
97 4,476,069
151 4,476,070

CLASS 264

15 4,476,071
22 4,476,072
25 4,476,073
35 4,476,074
40.7 4,476,075
45.3 4,476,076
53 4,476,077
109 Re.31,703
119 4,476,078
154 4,476,079
176 R 4,476,080
262 4,476,081
288.4 4,476,082
318 4,476,083
342 R 4,476,084

CLASS 266

48 4,475,719
157 4,475,720
236 4,475,721

CLASS 267

9 C 4,475,722
47 4,475,723
103 4,475,724
179 4,475,725

CLASS 269

41 4,475,726
88 4,475,727
94 4,475,728

CLASS 270

31 4,475,729
41 4,475,730

CLASS 271

9 4,475,731
10 4,475,732
120 4,475,733

CLASS 273

410 4,475,734

CLASS 277

3 4,475,735
4,475,736
182 4,475,737
206 A 4,475,738
216 4,475,739

CLASS 280

403 4,475,740
482 4,475,741
632 4,475,742
4,475,743
775 4,475,744
804 4,475,745
808 4,475,746

CLASS 282

11.5 A 4,475,747

CLASS 285

3 4,475,748
47 4,475,749
95 4,475,750
131 4,475,751

CLASS 290

6 4,476,395
53 4,476,396
54 4,476,397

CLASS 292

210 4,475,752
268 4,475,753
336.3 4,475,754

CLASS 294

51 4,475,756
4,475,757
67 AA 4,475,758
82 R 4,475,755

CLASS 296

1 S 4,475,759
26 4,475,760
61 4,475,761
65 R 4,475,762
4,475,763
136 4,475,764
210 4,475,765
213 4,475,766
221 4,475,767

CLASS 297

283 4,475,768
331 4,475,769
353 4,475,770

CLASS 299

4 4,475,771
5 4,475,772

CLASS 303

6 A 4,475,773
112 4,475,774

CLASS 305

28 4,475,775

CLASS 307

39 4,476,398
44 4,476,399
147 4,476,400
269 4,476,401
270 4,476,402
475 4,476,403

CLASS 308

6 C 4,475,776

CLASS 310

27 4,476,404
60 R 4,476,405
67 A 4,476,406
71 4,476,407
156 4,476,408
198 4,476,409
228 4,476,410
361 4,476,411

CLASS 312

330 R 4,475,778

CLASS 313

130 4,476,412
550 4,476,413

CLASS 315

240 4,476,414

CLASS 318

135 4,476,415
283 4,476,416
329 4,476,417
332 4,476,418
444 4,476,419
608 4,476,420
696 4,476,421
776 4,476,422
800 4,476,423
832 4,476,424

CLASS 320

39 4,476,425

CLASS 323

226 4,476,426
234 4,476,427
299 4,476,429
314 4,476,428

CLASS 324

61 R 4,476,430
73 R 4,476,431
121 R 4,476,432
158 P 4,476,433
233 4,476,434

CLASS 329

50 4,476,435

CLASS 330

10 4,476,436
138 4,476,437
149 4,476,438
254 4,476,439
260 4,476,440
262 4,476,441
265 4,476,442
288 4,476,443
297 4,476,444

CLASS 331

3 4,476,445

CLASS 333

32 4,476,446
111 4,476,447
173 4,476,448

CLASS 335

138 4,476,449
196 4,476,450
262 4,476,451

CLASS 337

102 4,476,452
361 4,476,453

CLASS 338

32 R 4,476,454

CLASS 339

5 M 4,475,779
17 C 4,475,780
17 LM 4,475,781
18 B 4,475,782
19 4,475,783
43 4,475,784
75 P 4,475,785
99 R 4,475,786

CLASS 340

58 4,476,455
347 AD 4,476,456
347 DD 4,476,458
347 P 4,476,457
572 4,476,459
617 4,476,460
667 4,476,461
711 4,476,462
712 4,476,463
731 4,476,464
783 4,476,465
805 4,476,466
825.034 4,476,468
825.49 4,476,469
825.5 4,476,467

CLASS 343

778 4,476,470
779 4,476,471

CLASS 346

75 4,476,472
155 4,476,473
160 4,476,474

CLASS 350

6.4 4,475,787
96.15 4,475,789
96.20 4,475,788
96.21 4,475,790
127 4,475,791
162.17 4,475,792
172 4,475,793
288 4,475,794
357 4,475,795
525 4,475,796

CLASS 354

1 4,475,797
114 4,475,798
308 4,475,799
406 4,475,800
419 4,475,801
456 4,475,802
481 4,475,803

CLASS 355

3 FU 4,475,804
8 4,475,805
14 R 4,475,806
15 4,475,807
74 4,475,808
84 4,475,809
85 4,475,810
133 4,475,811

CLASS 356

32 4,475,812
73 4,475,813
138 4,475,814
385 4,475,815
437 4,475,816

CLASS 357

23.13 4,476,476
23.7 4,476,475
30 4,476,477
41 4,476,478
42 4,476,479

44 4,476,480
58 4,476,481
71 4,476,482
4,476,483

CLASS 358

11 4,476,484
73 4,476,485
78 4,476,486
80 4,476,487
86 4,476,488
107 4,476,489
148 4,476,490
167 4,476,491
208 4,476,492
214 4,476,493
222 4,476,494
262 4,476,495
286 4,476,496
298 4,476,497
330 4,476,498
342 4,476,499

CLASS 360

10.3 4,476,500
19.1 4,476,501
65 4,476,502
75 4,476,503
93 4,476,504
94 4,476,505
96.6 4,476,506
104 4,476,507
106 4,476,508
119 4,476,509
132 4,476,510

CLASS 361

96 4,476,511
103 4,476,512
127 4,476,513
213 4,476,514
226 4,476,515
315 4,476,516
327 4,476,517
328 4,476,518
399 Re.31,704

CLASS 362

32 4,476,519

CLASS 363

43 4,476,520
101 4,476,521

CLASS 364

200 4,476,522
4,476,523
4,476,524
4,476,525
4,476,526
4,476,527
4,476,528
424 4,476,529
424.1 4,476,530
431.01 4,476,531
431.05 4,476,532
473 4,476,533
479 4,476,534
480 4,476,535
721 4,476,536
748 4,476,537
817 4,476,538
825 4,476,539
851 4,476,540
900 4,476,541
4,476,542
4,476,543

CLASS 365

19 4,476,544
178 4,476,545
200 4,476,546
205 4,476,547
233 4,476,548

CLASS 366

3 4,475,817
17 4,475,818
107 4,475,819
142 4,475,820
160 4,475,821

CLASS 367

13 4,476,549
21 4,476,550
43 4,476,551
56 4,476,552
144 4,476,553
197 4,476,554

CLASS 368

88 4,475,822

CLASS 369

44 4,476,555
258 4,476,556

CLASS 370

28 4,476,557
100 4,476,558
110.1 4,476,559

CLASS 371

15 4,476,560
25 4,476,561
39 4,476,562

CLASS 372

50 4,476,563

CLASS 373

9 4,476,564
50 4,476,565

CLASS 374

1 4,475,823

CLASS 375

4,476,566

CLASS 376

137 4,476,085
219 4,476,086
285 4,476,087
347 4,476,088
381 4,476,089

CLASS 377

24 4,476,567
60 4,476,568

CLASS 378

175 4,476,569

CLASS 381

51 4,476,570
37 4,476,571
73 4,476,572

CLASS 384

306 4,475,824
572 4,475,777

CLASS 400

120 4,475,825
124 4,475,826
144.2 4,475,827
146 4,475,828
232 4,475,829
238 4,475,830
279 4,475,831
496 4,475,832
605 4,475,833

CLASS 401

99 4,475,834
132 4,475,835
201 4,475,836
213 4,475,837
270 4,475,838

CLASS 403

2 4,475,839
20 4,475,840
287 4,475,841
370 4,475,842
394 4,475,843

CLASS 404

2 4,475,844
25 4,475,845

CLASS 405

17 4,475,846
264 4,475,847

CLASS 406

115 4,475,848
163 4,475,849

CLASS 407

54 4,475,850
113 4,475,851

CLASS 408

73 4,475,852

CLASS 409

137 4,475,853

CLASS 410

103 4,475,854
126 4,475,855

CLASS 411

33 4,475,856
88 4,475,857
304 4,475,858
361 4,475,859

CLASS 414

416 4,475,860
462 4,475,861
513 4,475,862
589 4,475,863

CLASS 415

9 4,475,864
36 4,475,865
112 4,475,866
119 4,475,867
213 A 4,475,868

CLASS 416

170 R 4,475,869

CLASS 417

206 4,475,870
222 4,475,871
315 4,475,872
422 4,475,873

CLASS 418

55 4,475,874
4,475,875
84 4,475,876
140 4,475,877
201 4,475,878

CLASS 419

19 4,476,090

CLASS 420

443 4,476,091

CLASS 422

4 4,476,092
61 4,476,093
62 4,476,094
75 4,476,095
96 4,476,096
112 4,476,097
140 4,476,098
144 4,476,160

CLASS 423

10 4,476,099
249 4,476,100
253 4,476,101
365 4,476,102
417 4,476,103
605 4,476,104
648 R 4,476,105

CLASS 424

1.1 4,476,106
49 4,476,107
50 4,476,108
78 B1 4,225,580
85 4,476,109
93 4,476,110
119 4,476,111
127 4,476,112
161 4,476,113
164 4,476,114
4,476,115
177 4,476,116
4,476,117
178 4,476,118
180 4,476,119
4,476,120
195 4,476,121
246 4,476,122
4,476,123
4,476,124
4,476,125
248.56 4,476,126
250 4,476,127
4,476,128
4,476,129
251 4,476,130
258 4,476,131
4,476,132
269 4,476,133
4,476,134
270 4,476,135
272 4,476,136
4,476,137
273 R 4,476,138
282 B1 4,256,761
283 4,476,139
4,476,140
321 4,476,141

CLASS 425

22 4,475,879
353 4,475,880
397 4,475,881

CLASS 426

3 4,476,142
40 4,476,143
46 4,476,144
285 4,476,145
522 4,476,146
534 4,476,147
629 4,476,148

CLASS 427

2 4,476,149
10 4,476,150
34 4,476,151
38 4,476,152
40 4,476,153
53.1 4,476,154
58 4,476,155
82 4,476,156
84 4,476,157
109 4,476,158
136 4,476,159
162 4,476,161
164 4,476,162
249 4,476,163
4,476,164
258 4,476,165
387 4,476,166

CLASS 428

4 4,476,167
4,476,168
34 4,476,169
35 4,476,170
38 4,476,171
4,476,172
57 4,476,173
58 4,476,174
170 4,476,175
195 4,476,176
206 4,476,177
215 4,476,178
216 4,476,179
220 4,476,180
4,476,181
265 4,476,182
286 4,476,183
288 4,476,184
290 4,476,185
4,476,186
325 4,476,187
332 4,476,188
336 4,476,189
350 4,476,190
378 4,476,191
391 4,476,192
531 4,476,193
585 4,476,194
695 4,476,195

CLASS 429

32 4,476,196
4,476,197
4,476,198
34 4,476,199
56 4,476,200
62 4,476,201
94 4,476,202
139 4,476,203
196 4,476,204
217 4,476,205
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158 4,475,883
170 4,475,884
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118 4,475,886
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45 4,476,573
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13 4,475,893
144 4,475,894

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259 4,475,895
454 4,475,896

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937 4,476,335
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512 4,476,341
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28 4,475,900
67 4,475,901
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367 4,475,911
385 4,475,912
387 4,475,913
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890 4,475,916

CLASSIFICATION OF DESIGNS

D2—	28	275,809		464	275,824		46	275,841			275,857		140	275,873		15	275,889
	40	275,810			275,825		106	275,842	D15—	7	275,858			275,874		17	275,890
	44	275,811		580	275,828		120	275,843		28	275,859	D22—	19	275,875			275,891
	229	275,812		608	275,827		125	275,844		130	275,860	D23—	72	275,876		18	275,892
	276	275,813	D7—	52	275,829	D11—	129	275,845		138	275,861		97	275,877		33	275,893
	378.2	275,814		337	275,830	D12—	125	275,846			275,862			275,878		54	275,894
	400	275,815	D8—	14	275,831		179	275,847	D16—	30	275,863		121	275,879	D26—	61	275,895
		275,816		375	275,832	D13—	24	275,848	D18—	24	275,864			275,880		110	275,896
D3—	30.1	275,817	D9—	341	275,833			275,849	D19—	92	275,865		123	275,881	D27—	51	275,897
	33	275,818		355	275,834			275,850			275,866			275,882	D28—	3	275,898
		275,819		415	275,835		35	275,851	D20—	43	275,867			275,883			275,899
	35	275,820		418	275,836	D14—		275,852			275,868		165	275,884		82	275,900
	71	275,821			275,837		53	275,853	D21—	52	275,869	D24—	26	275,885	D32—	9	275,901
	73	275,822		435	275,838		68	275,854		105	275,870		31	275,886		35	275,902
	76	275,823		439	275,839		79	275,855		134	275,871		53	275,887	D34—	40	275,903
D6—	328	275,826	D10—	6	275,840		101	275,856			275,872	D25—	1	275,888			

CLASSIFICATION OF PLANTS

P—	38	5,291		69	5,292		70	5,290									

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

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54 : 4,475,573
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56 : 4,475,924

DESIGN PATENTS

04 : 275,812
06 : 275,818
275,819
275,840
275,841
275,846
275,851
275,858
275,876
275,884
275,896

08 : 275,850
275,863
09 : 275,844
275,885
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10 : 275,836
12 : 275,867
13 : 275,862
17 : 275,854
275,870

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275,894
275,895
18 : 275,886
20 : 275,827
275,842
21 : 275,845
26 : 275,816
275,852
29 : 275,861

275,869
34 : 275,817
275,833
275,875
275,900
36 : 275,809
275,811
275,820
275,824
275,825

275,829
275,837
275,838
275,839
275,843
275,860
39 : 275,810
42 : 275,815
44 : 275,866
47 : 275,898

275,899
48 : 275,847
275,888
275,893
50 : 275,878
51 : 275,826
53 : 275,832
55 : 275,835
275,887
56 : 275,814

PLANT PATENTS

06 : 5,290
5,291
5,292

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